

OUTAWAY: FABULOUS FEATHERWEIGHT p.32

SPORTS CARS

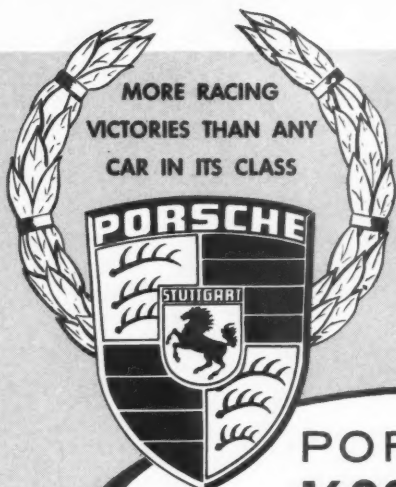
ILLUSTRATED

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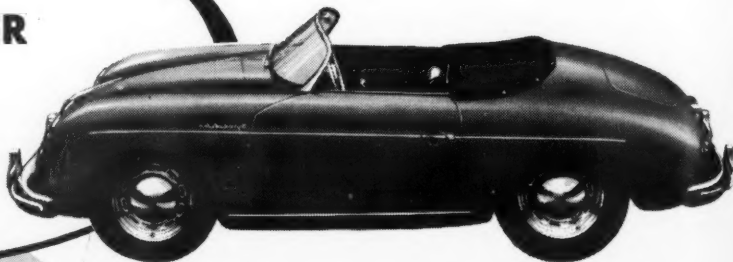
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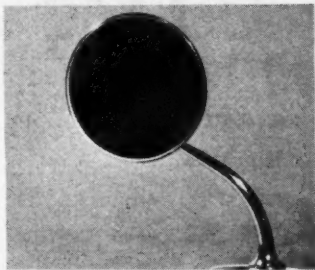
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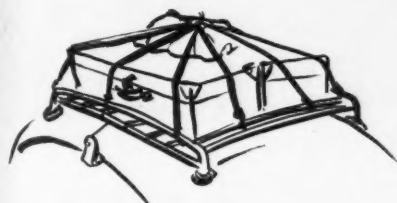


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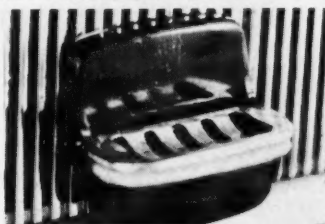
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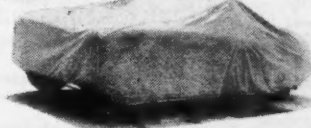
Hi, there! At last the goodies which we located in Europe are beginning to arrive and we can present them here for the first time. Lots of the items we will feature in the next few months will be absolutely new to the U.S., and some were premiered at the Paris Auto Show. Others will be gadgets which we have known about and wanted but were unable to find the source until our trip last fall. At any rate, we sincerely hope that they will find favor with you and that you will be active in your set in ordering something every month!

This isn't imported, but it looks like a real necessity to us: a front license plate bracket.



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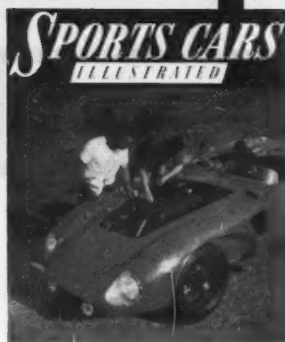
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MG MITTEN
Box 121, Dept. S3 Ph. Cumberland 3-1410
South San Gabriel, California



SPORTS CARS ILLUSTRATED

march 1957
no. 9 vol. 2

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He's always glad of an excuse to drive a Corvette! . . . Chevrolet Division of General Motors, Detroit 2, Michigan.

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AUTOBOOKS 2708 B Magnolia Boulevard
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very sincerely yours:

THIS Chevrolet engine business is getting out of hand but in a way that gives one a very warm feeling indeed. Every third letter we get seems to ask for information on how the writer can stuff a Sheh-Vee into something other than a Chevrolet. The range runs all the way from MG to, believe it or not, Ferrari and Maserati. This is not all dream stuff, either. By the time you read this there will be at least one Chev-powered Ferrari, an Arnolt-Bristol-Chev, several Morgans, a string of Triumphs, an uncounted number of Austin Healeys and several TD's all carrying one or another version of GM's smallest V8. Oh, yes, I forgot about the Ghia Fiat coupe cum Chev.

It figures. GM didn't exactly plan things that way but they've managed to come up with a true successor to Henry's popular flat-heads. (You know, the ones that grabbed all those Bonneville records.) Light, cheap and possessing the strength to stand double the stock output, the little V8 is a natural. With all the speed equipment being manufactured for this meaty little (by U. S. standards, that is) plant things are well underway toward a domestic engine that can be used to run successfully against the equipment from overseas.

In fact, name a sports car make that hasn't been or isn't about to get stuffed full of Chevy (Porsche excepted — maybe). If, sometime, you see an MG haul off and leave something hot sitting anchored to the pavement, don't say we didn't warn you.

* * * *

A fairly miniscule portion of criticism comes our way concerning SCI's approach to those new to the subject of quicker-than-usual cars and beginners in the sport. We feel that readers, new and otherwise, would rather have the whole story on subjects we cover instead of watered down versions. There isn't much that can be learned from a diet of tyro topics, at least on a continuous basis. It doesn't take long for a beginner to catch up and SCI makes a policy of using American terms as much as possible despite the international character of the subject at hand. This way readers can be sure they're not missing anything that might have been left out had the story been watered down. One can always re-read a story for items missed the first time around but a reader cannot get something that isn't there in the first place. Stated another way, it's just that we feel that someone who lays out his 35 cents for information should be given his money's worth — plus. O.K.?

* * * *

Speaking of money's worth, this issue should have it for purist and backyard enthusiast alike. For example, that yellow Ferrari on the cover, over which Dave Ash and deponent are bending, is a case of double coverage. Dave wrung the beastie out for a driver's report and Tech Editor Karl Ludvigsen has taken it apart for a technical report — the whole story starting on page 40. On the center spread is our usual cutaway feature, this time a veritable gem of basement engineering — one of the most beautifully executed specials we've yet seen. It's the Crosley built by Martin Tanner of Detroit, you-know-where. Then, if you've ever battered a hole in a Fiberglass body and had trouble getting it patched up, worry no more. Save the spread starting on page 38. This one gives step-by-step instructions on how to effect these repairs at home. It could save you many a buck in repair bills, particularly if you live in an area where these things are prone to occur.

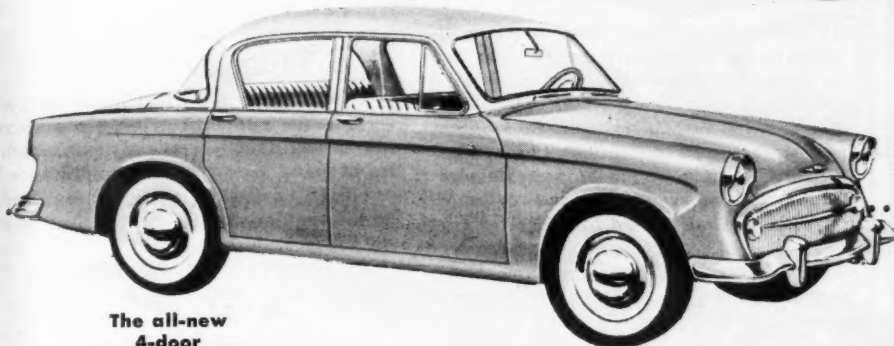
— john christy



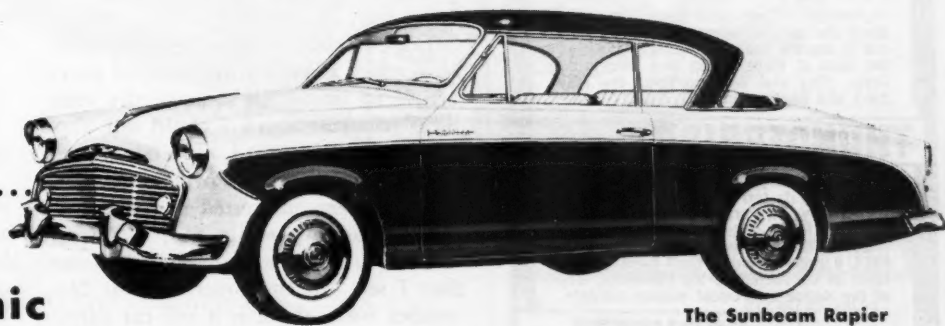
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HERE ARE BUT A FEW INSTANCES
OF PERFORMANCE INCREASES

190-SL



After being equipped with a special Iskenderian grind this Mercedes 190-SL shortened its ET in the 1/4 mile by 3 FULL SECONDS. A phenomenal performance, especially in lieu of the fact that only equipment change was the cam. Top revs was improved as well as terrific increase in torque.

300-SL: Having designed the sensational grind for the 190-SL, Iskenderian Engineers are now working on a similar performance booster for the 300-SL. For this purpose a late model car has been purchased. Watch for future developments.



JAGUAR

The racing world is still talking about the unbelievable feat accomplished by a modified Jaguar in winning this year's Pikes Peak Climb. In setting back on their heels all the professional built cars this Jag, built by Jerry Unser of Albuquerque, N. M., established a new record. Cam used was the Isky XM-3 and Engineered Kit.

Incidentally, if you have been wondering about the sudden rejuvenation of the special D Jaguars that have been dominating the field at Elkhart Lake and Thompson, Conn., they also are employing the Isky XM-3 and Engineered Kit.

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Practically every 'hot T-Bird' on the road today owes its terrific performance to the famed Isky E-Z Parabolic Revmaster Cam and Kit. Even unblown T-Birds are consistently running over 100 MPH. Send for FREE 8 page brochure on T-Birds engine tests as conducted by Vic Edelbrock, one of the nation's foremost engine builders.

CORVETTE

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letters

insurance fee

Dear Sir:

Yesterday I received my new accident policy on my Porsche 1600. The insurance people added about \$50 extra with the following remark: "The premium is this high due to the fact that it is a foreign made car plus the fact that it is a 1956 model. Nevertheless, we are having the comprehensive and collision rechecked by the company as to rate." It seems to me that this is the beginning of the end—when any insurance company is the sole judge and jury of how big a criminal I really am. I sure would like your opinion on this matter.

Yours truly,
William Olthoff,
North Bergen, N.J.

An insurance company must make some judgment as to the "criminality index" of its clients but most enlightened companies are coming to realize that the type of car driven has little bearing on the case unless the machine is of itself unsafe. This applies primarily to liability and property damage insurance. Comprehensive and collision rates are generally based to a large extent on the cost of replacement parts. However it would seem that your insurance company has been a bit overzealous in this particular case.—Ed.

what is it?

Dear Sir:

I have just finished reading your November issue. I truly enjoyed every article in it — even some of the technical material which I could not altogether understand. I especially liked the article on Chuck Porter's 300 SLS.

I have been interested in sports cars for only a short while and, therefore, am not familiar with every sports car that I see. On the cover of your November issue, there is a red car carrying the number 49. It also appears on page ten behind the 300 SLS. Recently, I saw a car very much like it and have been wondering what it was. A friend told me that it was a Ferrari but this does not seem likely to me. Could you tell me what the car in your picture is?

Thank you,
Sam A. Turneabe
Dallas, Texas

The car is a 2.6 Ferrari with a body by Touring of Milan. It's a fairly early-day machine and this one is about fourth-hand now. It was formerly owned by Howard Wheeler, among others including Phil Hill and possibly Bill Spear. For all its years and racing mileage it still goes like a Swiss watch. — Ed.

class h enthusiast

Dear Editor:

I note on page four of the Dec. '56 issue of SCI that you plan to publish information on 750 cc cars. I'm heartily in favor of this since it seems pretty clear that having lots of competition in an inexpensive and safe class would be a big shot in the arm to sports car racing.

Along these lines, a series of articles designed to aid the home 750 cc special builder would be a big help. I've been engaged in the planning stage of just such an endeavor and it's amazing how difficult it is to round up reliable information.

More power to you and Class H.

Sincerely,
Joe K. Bair
Oak Ridge, Tennessee

Perhaps reader Bair has already seen our Jan. '57 and Feb. '57 stories on cars of this class. ("Baby Brutes" and "44 Inches Of Fight", respectively.) In this issue we have a centerspread of the Martin-T Crosley Special. And still more on Class H coming up.—Ed.

laurels

Dear Sirs:

A short while ago I sent inquiries (concerning the addresses of certain automobile distributors) to you and to a competitor of yours. From the other publication I received a brusque letter containing almost no information. From SCI I received all of the information I requested!

Thank you very much. Sports Cars Illustrated is the magazine for me!

Sincerely,
Bruce Goldstein,
Arlington, Virginia

You're quite welcome, Bruce.—Ed.

american mercedes?

Dear Sir:

In your September issue you told about the deal between Mercedes-Benz and the Curtis-Wright Company whereby they would produce some versions of the M-B line — namely, the 190 SL. Would this mean that they would manufacture the cars entirely or just assemble them?

Yours truly,
Richard Askeland
Rockford, Illinois

Most likely, if the cars are to be built here they will be assembled rather than produced. There have been several denials of these plans in public print but none from official sources at the factory. When SCI European Editor Jesse Alexander put the question to factory officials at Stuttgart they would neither confirm nor deny our information nor would the New York representatives of Daimler-Benz do so. In fact one of the latter confided that we were "covered with luck" on our story. Draw your own conclusions. — Ed.

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Bore	58 mm
Stroke	80 mm
Displacement	845 cc
Horsepower	32 BHP @ 4250 RPM
Compression Ratio	7.25:1
SUSPENSION	Independent on all 4 wheels

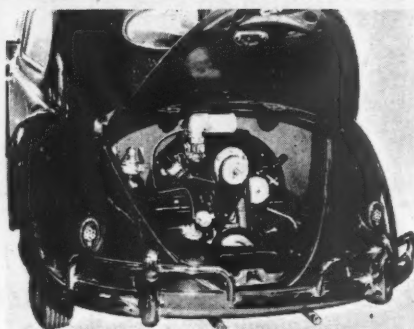
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PIT STOP

By KARL LUDVIGSEN

ORIENTAL SINGER

Would you please let me know what differential can be interchanged with the present stock setup in my 1952 Singer Roadster, for both better performance and durability. I'm also planning some engine modifications in the near future and would appreciate any and all references you can give me to "bolt-on" equipment, etc.

We are very proud of our Tokyo Sports Car Club here, and hold a wide variety of events. We have over a hundred members and nearly the same number of different types of cars.

T/Sgt William A. Miller
Japan

By a few minor rearrangements of mounting pads the MG TD rear axle assembly can be substituted for the Singer rear end. Alternatively you might be able to get the practically unbreakable late '54 or '55 Singer rear end assembly.

There is no bolt-on equipment as such for the Singer, but much can be done to build up performance. The first point of attack is carburetion. The side plate and the single carb setup should be removed from the head, and the internal manifold bored to take two or four intake flanges. A new side plate should then be made up from 1/4 inch sheet. It must be cut to fit the new intake flanges just as the original plate was fitted to the single intake. An external manifold can now be made up from tubing and ordinary flange plates, to take SU's, Webers, Solexes, Amals or what-have-you. Now go after the exhaust. Since this is a four-port, it's best to blend pipes from ports 1 and 4 into one pipe and ports 2 and 3 into another. These two pipes are then joined at a point just past the firewall. This is a true tuned exhaust, and will make your carb changes worthwhile.

The stock valve springs should be replaced with Triumph motorcycle springs, being extremely careful to ensure that there is enough room for the valve to open fully without completely compressing the spring. If you want to do it right, Ed Iskenderian has a cam grind for the 1500 Singer. Consult him for details.

These changes turn the humble four-seater into a Porsche-hunting Q-ship. Going all the way with a 10/1 compression ratio and aerodynamic body will even allow the Singer to bite chunks out of OSCA's and MG specials in Class F Modified. The listed modifications, however, if properly carried out, will produce 70 mph in the standing quarter plus 0-60 times in the neighborhood of 12 to 13 seconds.

SLOW PROCESS

Having raced and rallied myself close to the poorhouse, I recently found it neces-

sary to sell my foreign machine and buy an American product. Aware of the chassis under the Henry J, I bought one. I would like to use the frame for a touring special at a later date, but for the present it must be used as a family and rally car.

I would appreciate your suggestions for a series of modifications that I can carry out over a period of time, starting with stiffening the suspension and culminating in the removal of the body and the installation of a Fibreglas roadster body.

At present I'm thinking of a modified Willys F-head, four-cylinder engine and Willys floor-shift box. The car now contains a 1953 four-cylinder L-head.

George Gale
Miami Springs, Florida

I'm afraid that a program of modifications beginning with the sedan and ending with a new body would be difficult to lay out. The requirements of the lighter roadster are quite different from those of the whole Henry J, regarding shocks, spring rates, weight distribution and similar basic factors.

The J chassis is nice with regard to size, but when the pressed steel body is stripped off it becomes somewhat lacking in stiffness. If you plan a Fibreglas body, be sure to reinforce the chassis with tubular or hat-section hoops through the cowl and seat-back area.

When this body is in place the car will presumably be lighter than before, and this in itself will have the effect of raising the relative spring stiffnesses all around. You will, though, want heavier coils in front, and definitely more damping at the rear. As usual with Hotchkiss drives, Traction-Master-type radius rods relieve the leaf springs of a lot of extra work.

The Willys F-head four would be fun to work over, but the F-head six would give much more satisfying results and will fit right in. You can even drop it in your J now and begin warming it over. .080 inch off the head will give you an 8.5/1 compression ratio. To fit multiple carbs, the manifold side of the head must be sawed away and a cover plate fitted. Side draft carburetors are specially suitable for this installation.

MINOR FRAME

I read and re-read your good articles on the Renault and VW in the July, 1956 issue, and they made my small-car heart quicken. You really started hitting home with "Minor Modification" in October, and the article on Vale Wright's Renault special finally did it. I have never done any work on frames, except to "chop" them in my old days in Phoenix, and would like a new one for my Morris. Can you put me in touch with someone who can design a good frame to take the running gear of my Minor?

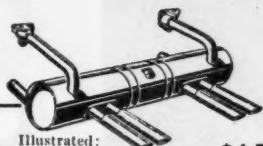
John B. Fattaleh
Dallas, Texas

We suggest that you contact the Auto-sport Equipment Co., PO Box 122, Cooksville, Ontario, Canada. They have built up several very nice truss-type tubular frames designed to take Morris Minor running gear, and intended for the burgeoning Canada Class. They could undoubtedly build one up for you, and they market the Alta overhead valve conversion as well.

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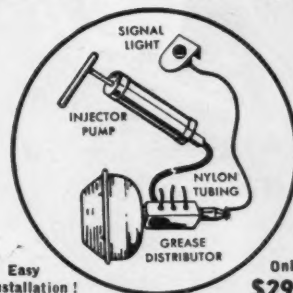
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Tony and the Golden Screwdriver

*If one man has the means
and will to bring professional
road racing to the U. S., that
man is Tony Parravano,
the builder who owns more
Ferraris than Enzo himself*

By JIM MOURNING

A YEAR ago Tony Parravano was virtually unknown in the road racing world. Today, his position is unique. He's talked about, written about, his comings and goings are noted by the sports car and professional crowds, rumors of his plans are heard in a number of places — usually the pubs that cater to the racing fraternity — and yet it has been almost a year since he has entered any of his once-dominant cars in U. S. competition.

The story of Parravano's rise from obscurity to the limelight is partly based on his clash with amateur racing groups. But a big reason for all the talk, internationally speaking, is Tony's predilection for buying up Ferraris and Maseratis in wholesale clumps. On his latest trip to Italy he casually picked up various pieces of Orsiware including the latest offset Grand Prix Maserati with which Moss won the GP of Italy.

With this purchase he also picked up three of the new

4.2 liter Maserati V8 engines with the avowed intention of combining the V8 with the GP car in an assault on Indianapolis. The man's proudest boast is the mild exaggeration that he owns more Ferrari equipment than does Enzo, himself.

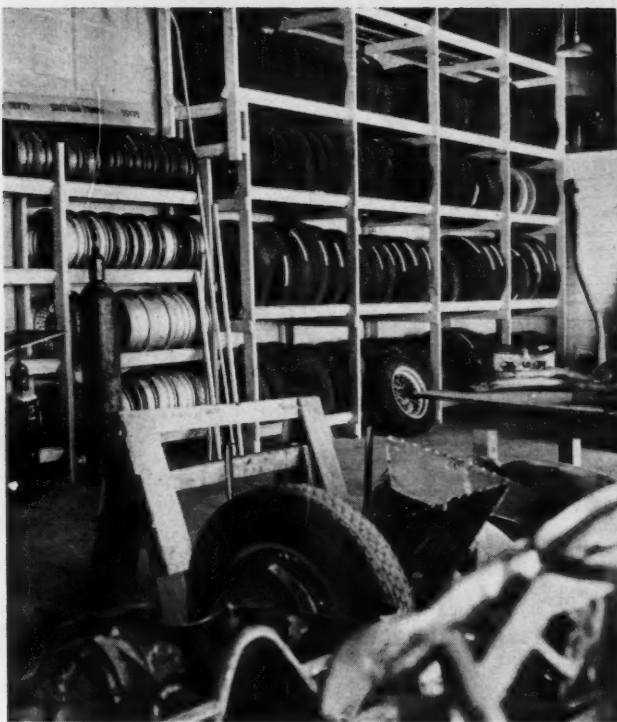
Bounced from the California Sports Car Club and SCCA for entering three cars (under technical ownership of one Henry Maag) in a professional race at Willow Springs, California last year, Parravano wrote officials: "I intend to support professional racing not only in Southern California, but throughout the United States, on an unqualified basis; that is to say, mentally, physically and financially."

This made the boys sit up and take notice. Here was a man with both the potential and the desire to blow the cork out of U. S. amateur road racing. The attack on the brickyard is the opening puff.

Parravano doesn't look like a crusader. At 39, he's a



Another section of the Parravano shop. White Maserati was one of the cars entered under the name of Henry Maag in the professional races at Willow Springs.



Part of the \$12,000 inventory carried by the Parravano stable. Stock probably exceeds that of many large retail parts houses.

dark, stocky man with a soft spoken manner, and an easy, almost boyish grin. Dressed in his usual casual slacks, a white shirt open at the throat, and a baggy sweater or jacket, he looks like the type who prefers being called by his first name, which is the case. When aroused, however, he can react with frightening intensity. And his actions are frequently direct — and brutal.

Drivers in particular complain of being on the receiving end of his frontal assaults. On one occasion in Italy, Parravano and a European writer had a leisurely breakfast and dropped out to the track at about nine o'clock to look over one of Tony's cars. About an hour later, the driver assigned to the car showed up, skidding his personal Lancia to a stop in front of the pits, and ambled toward the racer. Parravano gave him the cold eye for a moment, then turned to the writer and growled, "I'm going to fire that guy. If we can get out here at nine, so can he." The driver, realizing the futility of argument, scrambled, more puzzled than hurt at the summary button-stripping that followed Parravano's statement.

More often, a driver's grief is caused by a night on the town. "All my drivers have to keep in training," Parravano insists. "No drinks, plenty of sleep and that kind of thing." His absolute fanaticism on this subject broke up what could have been the most potent combination to come out of the U. S. in years.

Shortly after Parravano's enforced exit from U. S. amateur ranks, Carroll Shelby arrived to talk over the possibility of driving a 4.4 Ferrari for Tony on the European circuits. A discussion was slated to take place at dinner, with Parravano's secretary in attendance. At the last minute, Parravano couldn't make it, so Shelby and secretary dined alone at a respectable restaurant. Some time on the proper side of midnight, the secretary picked up and went home. Shelby retired to a sports car hangout for a bit of bench racing.

During the following week, the discrepancy in the times

(Continued on page 50)



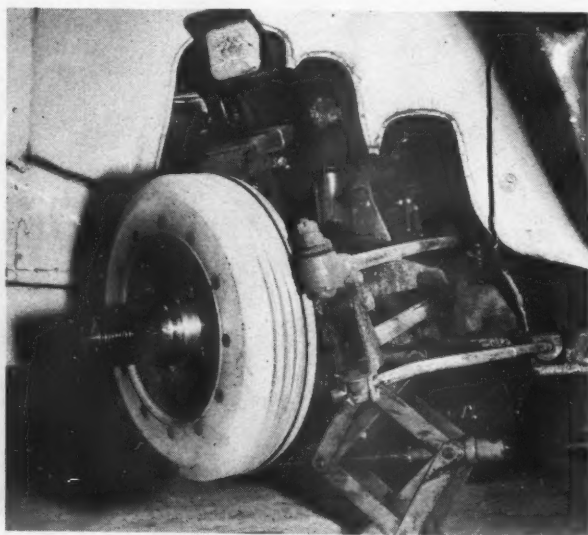
Representative fraction of the Parravano scuderia. Coupe at right is his first Ferrari. Jag, numbered "2", is his first sports car, now modified \$20,000 worth.

Poor Man's Ferrari



In full song, the Black-Siata-Fiat comes boring into a long right bend. It's a genuine Italian racing machine in every way, without the big bite out of the pocketbook that goes with the very special editions. Cornering is flat and vice-free.

By KARL LUDVIGSEN



Austin tie rod ends and heavy shocks have outfitted Fiat 500 front end for rugged running. Big 1400 Fiat brakes were added to cope with new-found horses.

WHEN a Pirelli-suit-clad daredevil reels off the names: Abarth, Giaur, Siata, Nardi, Mondial, Stanguellini and Weber, you're likely to think, "Ferrari, no doubt. The man is loaded." But don't be too hasty, friend. He's probably pushing a form of Fiat, which is the Italian equivalent of "Ford." Those are speed shops he's listing, and they all make souping-up goodies for the swarms of Fiats that scuttle out of the great factory at Turin. Abarth, Siata and Stanguellini in particular specialize in Fiats, and the last-named, a Fiat dealer, even builds d.o.h.c. heads for the bigger varieties.

Not even in this horsepower-mad country do we waste time making advanced speed equipment for engines that can't take it, so these Italian rocker-boxes must have something to offer. Except for their limited-production two-liter V-8, the current Fiat line is strictly four-barrel, and includes sizes of 600 cc, 1100 cc, 1400 cc and 1900 cc. They're versatile, then, and available around the world. To suit the heavy-booted Italians and their rugged country, they're way oversized. The astonishing clincher is that many Fiat parts are cheaper, even in this country, than the equivalent Volkswagen pieces. They are available through Columbia Motor Corporation, at 245 West 56th Street in New York, while Tony Pompeo in New Haven is a leading importer of the hop-up bits.

In the course of building up the sexy Siata seen on these

pages, Don Black of Ypsilanti, Michigan became well acquainted with these facts. He feels that a Fiat-based car is a perfect way to get into modified sports car racing at minimum cost, and backed this up by importing a new Siata 1100 Sprint in the Fall of 1955. Siata, of course, functioned for some time as the Experimental Department of Fiat, and like all their products the 1100 Sprint is an assemblage of Fiat parts. The engine, for example, is based on the beefed-up block of the 1100 TV (for "Turismo Veloce"), which displaces 1089 cc, or 66.4 cubic inches. Bore and stroke are 2.68 by 2.95 inches, and the factory output was 50 horsepower at 5200 rpm. Siata initially supplied the engine in modified form, and Don took it down and went the route with it. As always, this is but one of many ways to approach a given engine, but we're sure it'll give you a few ideas.

Siata apparently cast the special aluminum cylinder head that came with the roadster. It differed from standard in that the spark plug was angled closer to the vertical, and the combustion chamber had a more compact heart shape. Don wrote the piston-making firm of Mondial, in Italy, describing the engine, the head and his requirements, which included a compression ratio of 10 to 1. They responded with a piston set that carried the right crown contours for the Siata head. A mere .006 inch was removed from the head face to clean it up before assembly.

Valve and port sizes have been substantially stretched from standard. The present 32 mm diameter intake valve was 26 mm, while the 30 mm exhaust is up from 24 mm. Both valve seats were originally pressed in but the cast iron intake valve seat is now a cold shrink fit while the Stellite exhaust seat is now screwed in. Both seat angles are 45 degrees.

Correspondingly, the intake port size has gone up to 1 5/16 inch instead of 1 1/16, and the old 7/8 inch exhaust holes have jumped to 1 1/4 inch.

To make the most of this area, Don fitted an Abarth cam to the chain cam drive that distinguishes the TV from the gear-driven standard 1100. This was a handsome stick and it moved the car, but the valve gear was noisy and a tear-down revealed badly chewed lifters. The diagnosis was excessive valve acceleration plus high cam hardness, so a new contour was laid out to give the best possible results within the limitations of the semi-radiused tappets. Consulting on this and the actual grinding were done by Joe Lishin of Lishin Engineering, at 2560 Ewald Circle in Detroit, and the cam bears his identification number: 1910T.

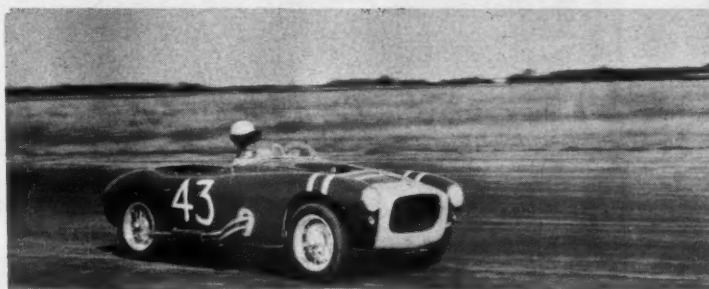
Both valves lift .270 inch instead of the stock .230, while the overlap is up from 20 to 44 degrees. Intake duration is 265 degrees instead of 240. Performance equals that of the Abarth cam and lifter life is much improved. Cam loadings were further cut by the use of shortened 1955-56 Buick Super pushrods, which individually were 15 grams lighter than the originals.

The standard rocker arms have an arm length ratio of 1 to 1.1. They were polished all over, magnafluxed and, like the pushrods, balanced. Special lightweight Abarth spring seats were fitted to all valves, as were outer valve springs from the same maker. The inner springs were shortened MG, rated at 45 pounds, making the total pressure for each valve 140 pounds.

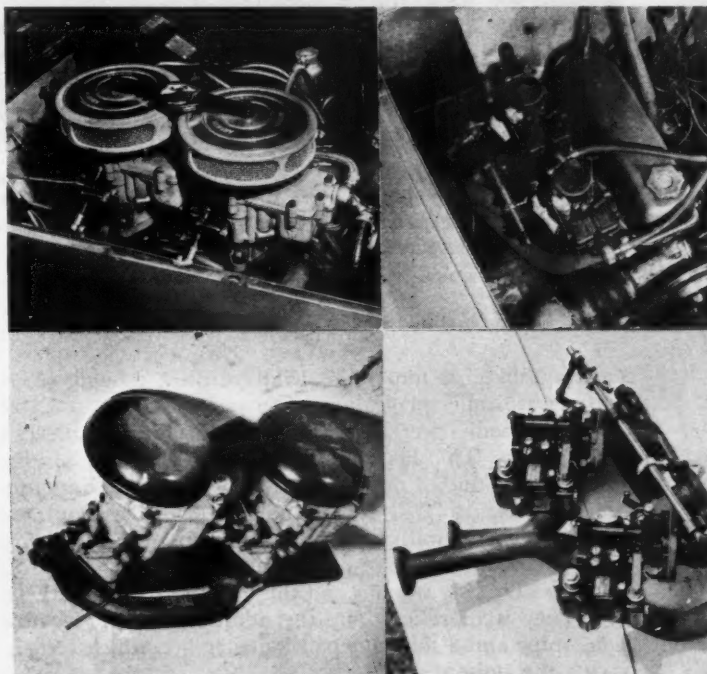
Original equipment on the Fiat 1100 induction system consisted of a single 32 mm Weber type DR10 carburetor, and as delivered the Siata had two of these units connected by a simple Siata-cast manifold. The whole works was replaced by a fabricated Abarth manifold carrying two 36 mm downdraft Webers, of type 1B. This manifold has an unusual twin balance pipe layout, and some rough experimentation showed that this is mainly for improving the idle. Carb venturis of 30 mm are fitted, while the jets have been drilled out after the unit was tested on the flow



Engine and gearbox sit well back into firewall, giving handy shift control. Seats and wheel are completely classic, both in construction and position.

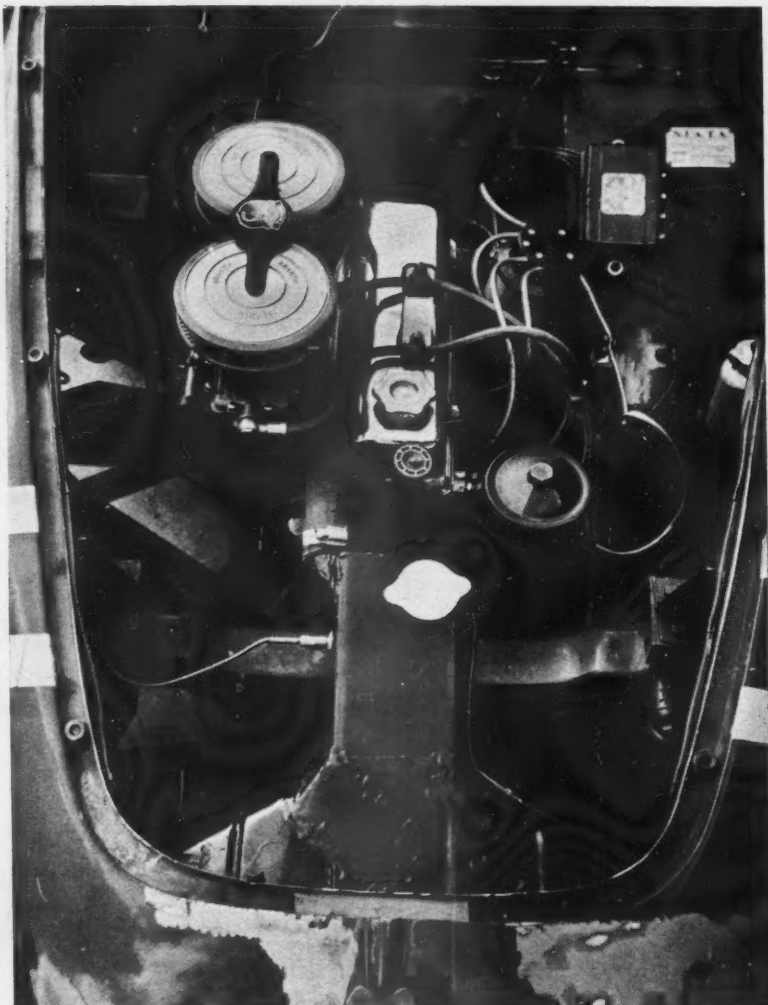


Co-driver Ken Askew finds line on tricky Harewood course before SCC One Hour Race. Siata Special is often seen in MGCC, SCCA and BEMC events.

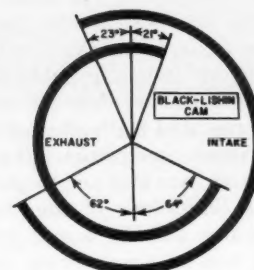
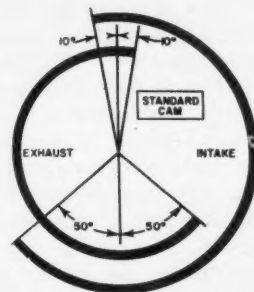
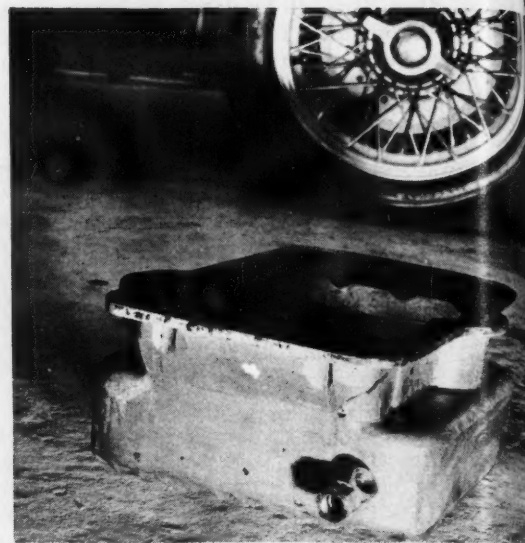


All kinds of manifold sets can be had for the 1100 Fiat, and similar Simca 1300. At upper left is Don's Abarth rig, with 36 mm Webers. Upper right is a variation on this, below it is a special Abarth. Original Siata is below left.

Special cast alloy sump from Italy has larger storage volume, is partial answer to hot oil problem that crops up. Oil cooler is a must for long-distance events.



Long extension on the radiator header tank was necessary to stop hose-blowing. Engine sits well behind high front crossmember, which limits potential engine length. Underhood room is otherwise ample, also spotless in this case.



Stock 1100 cam is typical touring unit, has negligible overlap. Black-Lishin grind is hotter, doesn't cut bottom-end power.

stand by Viktor Schupe. Not wildly drilled, though, since Don gets 20 miles per gallon when racing.

Abarth goodies were again enlisted to clean up the exhaust system. The Fiat has a three-port exhaust, so the center port is ducted out alone while the two side ones are joined to form a "Y". This bundle free-flows without regard for Siata firewalls, and to get it in unbent, the right-hand toeboard was grossly relocated with the help of Fiberglas. Turning sessions had the neighbors holding their ears. They were relieved by the addition of two lengths of flex pipe and a simple expansion chamber, which actually cuts the noise down.

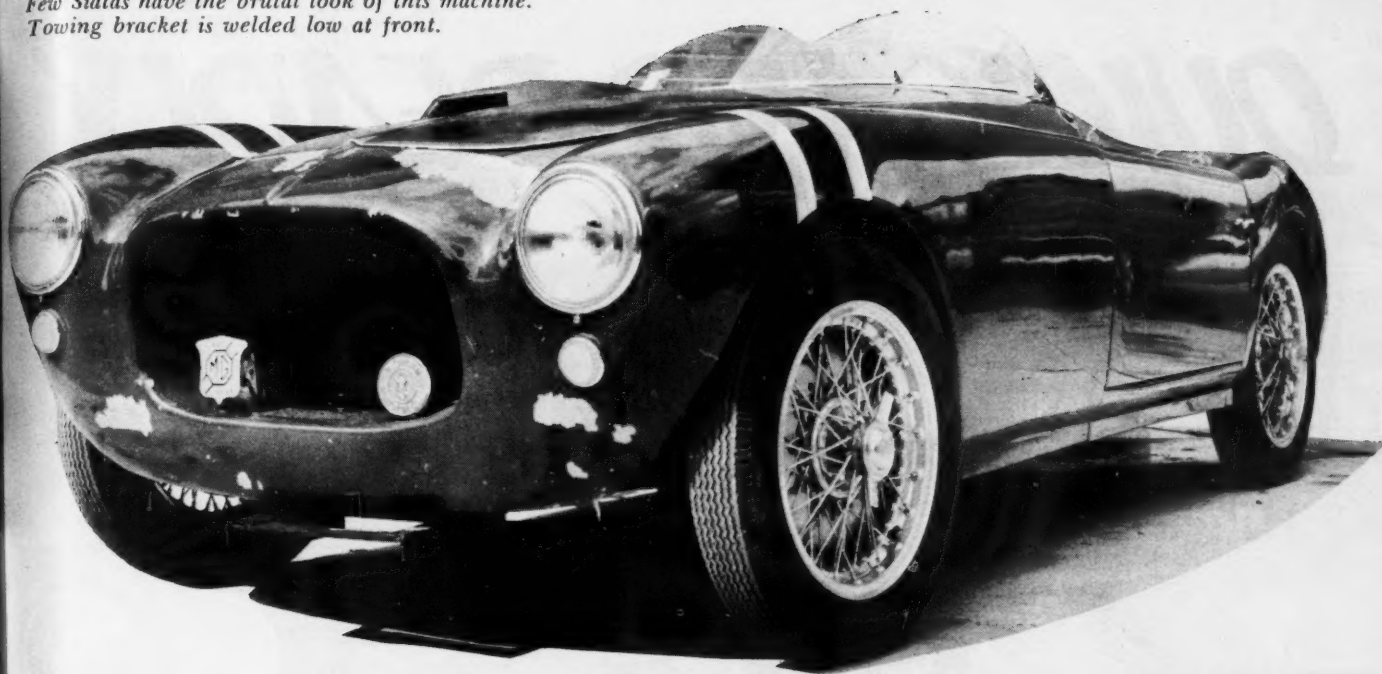
A right-hand rotation Vertex magneto for an MG was on hand, and was easily adapted to the Fiat. Type number OA-O/4, it was sent back to the representatives in this country to have its advance curve retailored. There's a manual control for static advance, which is usually set at TDC. Starting at 1200 rpm, the magneto advances between 12 and 18 degrees at full throttle. The usual plug is a 16

platinum-pointed Lodge R-47.

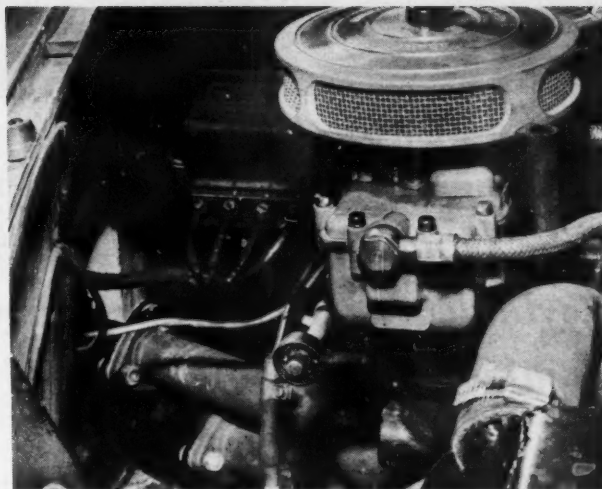
To take all the poke from this highly refined top end, the rest of the engine received a lot of less glamorous attention. It all starts with those Mondial pistons, which have full skirts and four Fiat rings. The two compression ring are 2.5 mm wide, and just below them is a combination compression-oil ring 3.5 mm wide. A pure oil ring of the same width is below the wrist pin. Knurlizing holds oil on the piston skirts, which clear the walls by .0025 inch. For rapid seating of the chromed top ring the cylinder is left rough after cleaning up. This 1100 TV block had very hard dry sleeves .040 inch thick, but these aren't standard.

Offset by 2 mm, the 22 mm piston pin is kept away from the walls by circlips. It's embraced by a full-floating sintered bronze bushing in the small end of the 1100 (or type 103) Fiat con rod. The two-bolt big end is 1.574 inches in diameter, and carries a Vandervell lead-indium bearing. Clearances on these have been upped from .0008

Few Siatas have the brutal look of this machine. Towing bracket is welded low at front.



Largely to appease irate neighbors, twin pipes from Abarth muffler were led into expansion chamber with single outlet. Much quieter with no power loss.



Sweeping Abarth exhaust has mind of its own, required relocation of right firewall. New wall is Fibreglas, and portion of old can be seen below piping.

to .0011 inch.

The crankshaft is a long but unusual story, which tells eloquently of the versatility of these Fiat fours. After some ruler and micrometer work, Don decided that his 1100 could use the big main bearings of Fiat's 1400 cc engine, and he set about adapting the 1400 (or type 101) crank to his block. This actually had a shorter stroke than the 1100, so when the rod journals were turned down they were also offset to maintain the desired amplitude. The block's three 1.653 inch diameter main bearings were line bored to 1.875 inch size, to take the regular Vandervell lead-bronze bearings for the type 101. Clearance for these is .0024 inch.

A slight difference in end distances called for thicker thrust surfaces, which were then built up by babbitt spraying. There was plenty of meat for the line boring operation, and the deep crankcase gives a full two inches of side support to each of the healthy main bearing caps. The

well-being of some sixty bucks worth of machining was safeguarded by static and dynamic balancing of the whole assembly within a tenth of a gram.

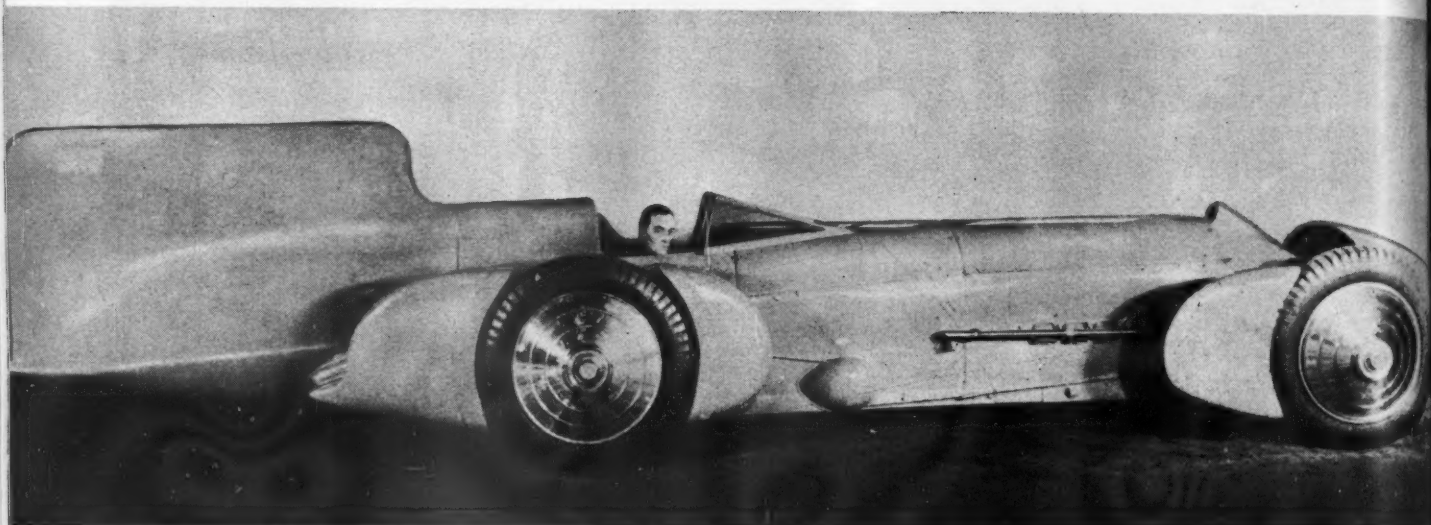
Structurally the above was a worthwhile improvement, as long as it didn't result in weakening of the crankcase bearing support. Prevention of distortion should often precede increases in bearing area. The problem that did crop up with this engine was the supply of enough cool oil to these bearings. Bigger gears had been added to the Fiat oil pump by Siata, and it put out very nicely, while the Italian Fram bypass filter was no obstacle to the system.

The sump, however, was the standard Fiat stamped part, which holds a mere three quarts of oil. SAE 50 oil kept the viscosity up for short sprints and time trials, but temperatures skyrocketed on longer runs. Dan has a bigger cast aluminum sump for the engine, and recommends also the use of an oil cooler.

(Continued on page 54)

QUICK AND DEADLY

Wide World



Malcolm Campbell and his 1450 hp Bluebird in which, at Daytona, he broke Henry Seagrave's record of 231 mph.

These were the monster hot rods that thundered out to take the Land Speed Record. Murderous machines with up to 36 cylinders and no brakes, they had statistics like a blood-count making each ride an epic of sheer, raw courage.

By **MERWIN DEMBLING**

THE backyard-built mechanical monstrosities that mangled the tracks of the 'twenties snorted fire, sounded just like blockbusters, and made many an insurance agent wish that World War I had never happened. The odds and ends of surplus machinery left lying around were much too easy to combine into the kind of jazzy-looking vehicle that made it easy for the driver's beneficiaries to collect.

With sketchy suspensions or none at all, and two, three, or even four engines — sometimes ex-airplane or Zeppelin power plants — their pickup was fantastic but their road-holding was close to nil. Anywhere up to 36 cylinders under the hood — when there was a hood — gave these roaring nightmares vital statistics that would look much more at home on a blood-count. And when they were battling for the checkered flag there was generally plenty of blood around to count!

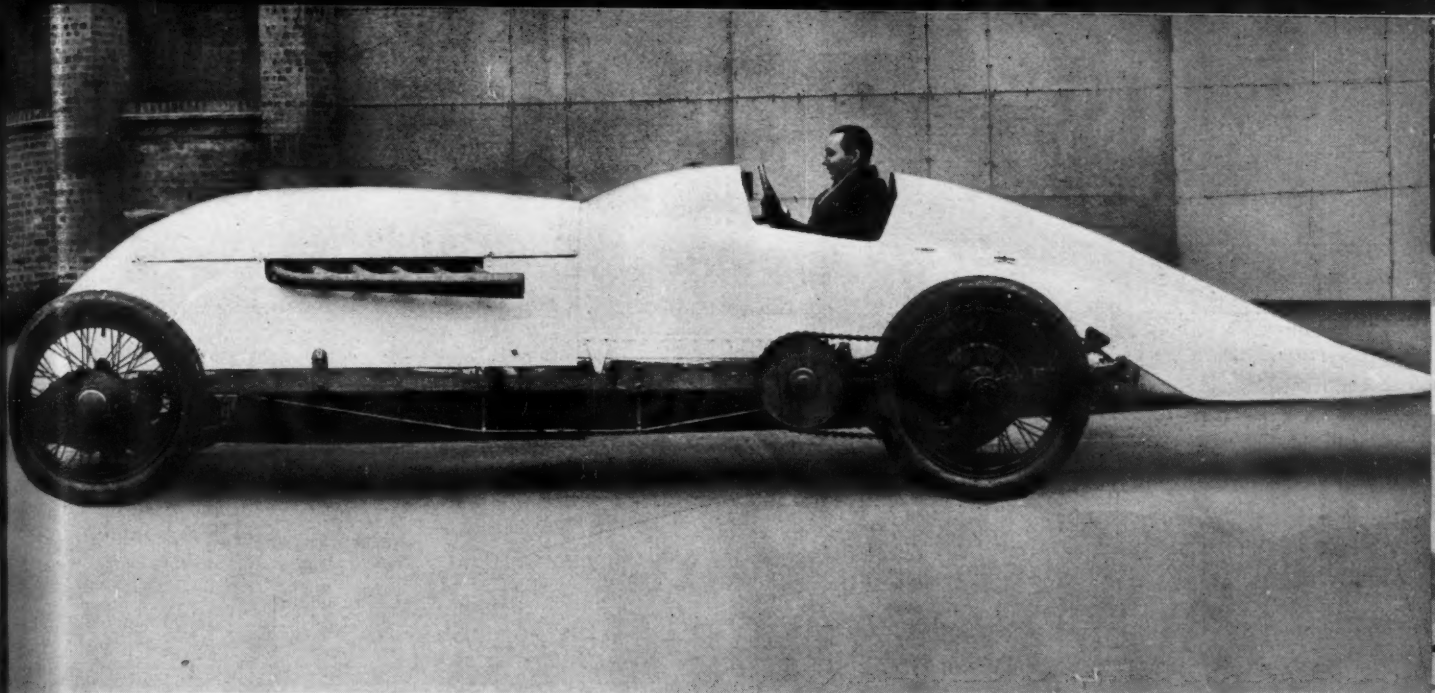
These cars were all good fun: fun to build, fun to drive, and funny to look at. With Count Louis Vorow Zborowski, however, the specials of the 'twenties take on a somewhat more sinister air.

Not that there was anything especially sinister about Zborowski himself. He was just a normal, healthy, half-American boy. When his father was killed driving a Mercedes in the 1904 La Turbie Hill Climb, young Louis

inherited a title, a hunk of Times Square real estate, a mansion in southern England, and a taste for outlandish excitement. Doctors nixed his bid for Royal Flying Corps service in World War I, but after the shooting was over he bought himself a plane, became a daredevil pilot, and then gave up flying altogether because there weren't enough thrills in it for him.

His big kick — aside from an occasional appearance as co-respondent in a divorce case — was explosions. Since he had lots of that indispensable green stuff and a hatful of old retainers, he used to amuse himself by getting the peasants to erect fancy brick houses on his estate, fill them — the houses, not the peasants — with cans of gasoline, light the fuse, and stand back for the big bang. Later on he bought himself a studio camera and went in for movie making. This bored his friends stiff, since his productions were hours-long epics consisting of one blast after another.

Zborowski's formula for breathtaking motoring was built on the same spectacular principle. He'd put a monster engine into a monster chassis and let 'er rip! His four cars — and the fifth that was coming up at the time of his fatal crash — were all big, brutal, and loud. As a frame he favored that of the 1914 chain-drive Mercedes; as for engines — well, anything that could run a Zeppelin was OK by him.



Chitty-Bang-Bang-IV renamed by Parry Thomas took World's land speed record at 168.75 mph at Pendine Sands, Wales. The following day, in the same car, P.T. drove Babs to break her own record—170.6.

Courtesy of The Motor

His first experiment with mayhem was called Chitty-Bang-Bang, after the idling sound of its 23-liter Maybach engine, taken from a German heavy bomber. Each of the six cylinders of this brute had a swept volume greater than the total engine capacity of one of today's Jags.

With a clumsily-built 4-seater body — the Count could afford the best but had the body specially built that way in order to con race officials into giving Chitty a generous handicap — the car was smaller than the Queen Mary, but not much. There was a good 15 feet of engine room in front of the driver, and a good five feet of fishtail behind him. It took a four-man gang using a specially lengthened crank to wind Chitty up, and before it became even moderately safe to get her into high, 800 lbs. of sand had to be packed into the back seat. Without it the monster was off balance, and had a tendency to remain airborne after hitting a bump.

It was a tire that finally finished Chitty. During a race in September, 1922, the right front suddenly went. The car had built up so much momentum that the shock when the rim hit the ground tore the whole front axle off. Even more out of control than usual, Chitty jumped her own front wheels, plunged off the track, and into a timekeeper's shelter, emerging on the other side with the unfortunate

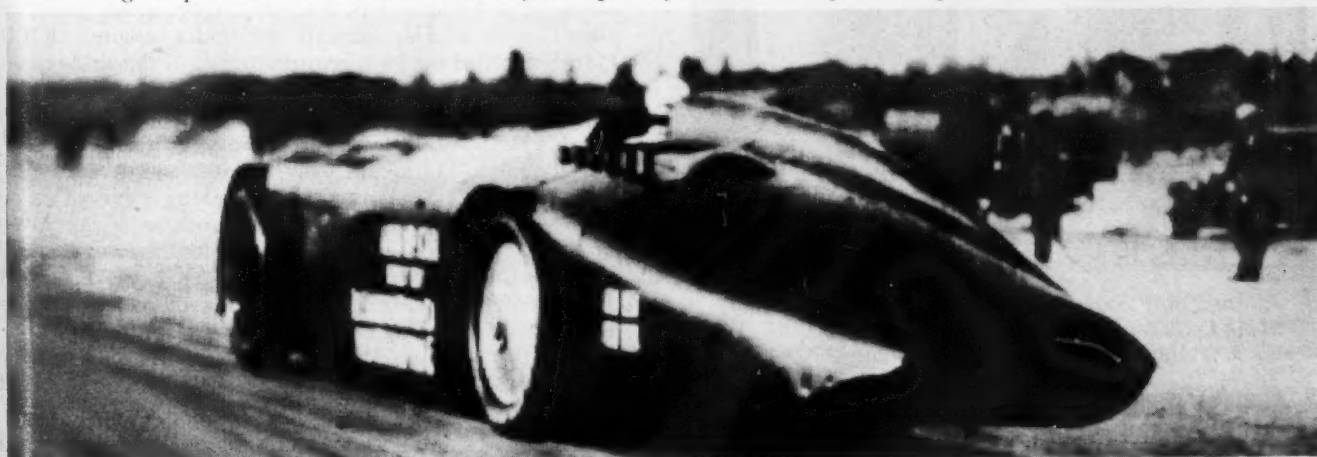
timekeeper's right hand. Zborowski was unhurt, but Chitty was wrecked. Eventually repaired, she was never in shape to race again.

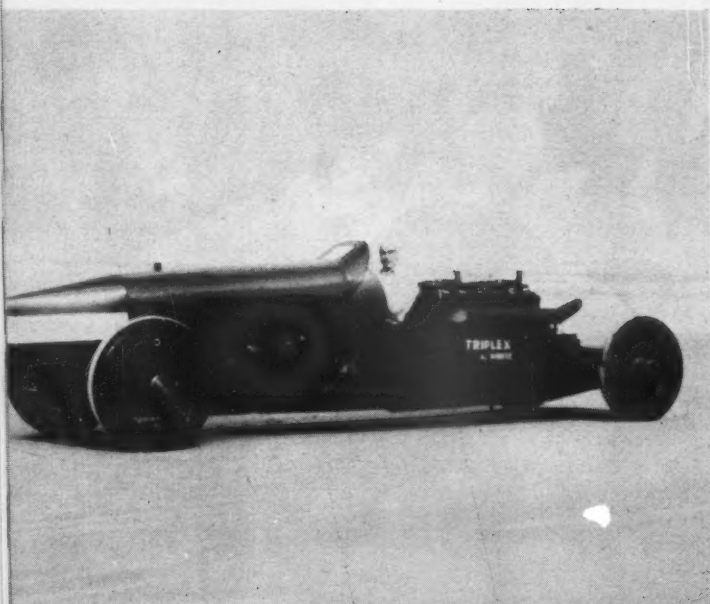
Her successor, called Chitty-Bang-Bang-II, used the same type of chassis but a slightly smaller engine, a 19-liter Benz aero. At any rate, Chitty II never amounted to very much as a racer, nor did her successor, Chitty III, Zborowski's only experiment with shaft drive. This car started out with a set of four-wheel brakes and a conventional, if biggish, Mercedes automobile engine. Finding the combination altogether too tame, Zborowski replaced the relatively tiny 105x140 power plant with a king-size — or rather Count-size — 140x160 aircraft Mercedes. Chitty III still wasn't anything special.

Chitty IV, which Zborowski called the Higham Special, after his estate in Kent, was the greatest of the series, and the only one, perhaps, with very much claim to fame as anything but an outsize freak. Its V-12 Liberty Aircraft Engine was used in Allied bombers during the Kaiser war. In the U.S. the engines commanded a high price from bootleggers, who used them in high-speed rum running launches. Its capacity of 27 liters made it the biggest engine ever to race in England up to that time.

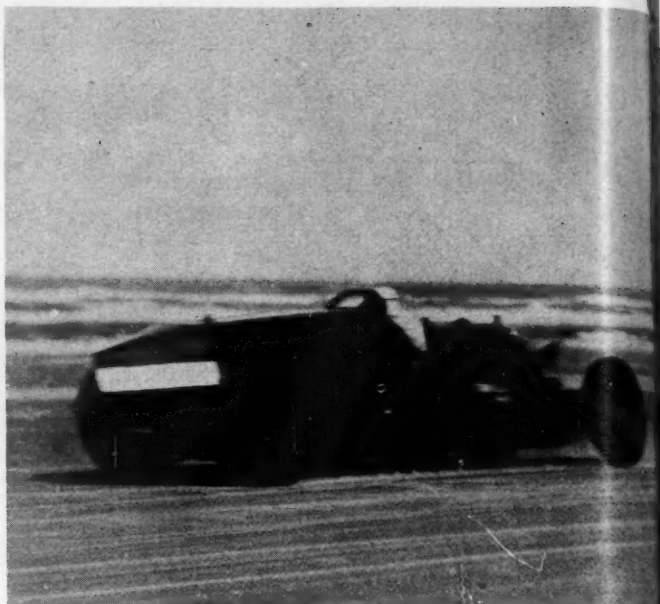
Though geared to hit the century at a mere 1200 revs.

Major H.O.D. Seagrave breaks the American record in his twin-engined, chain driven Sunbeam at Daytona Beach. Later Seagrave pushed the racer to a hair short of 204 mph. A year later, Campbell's Napier did 206.9.

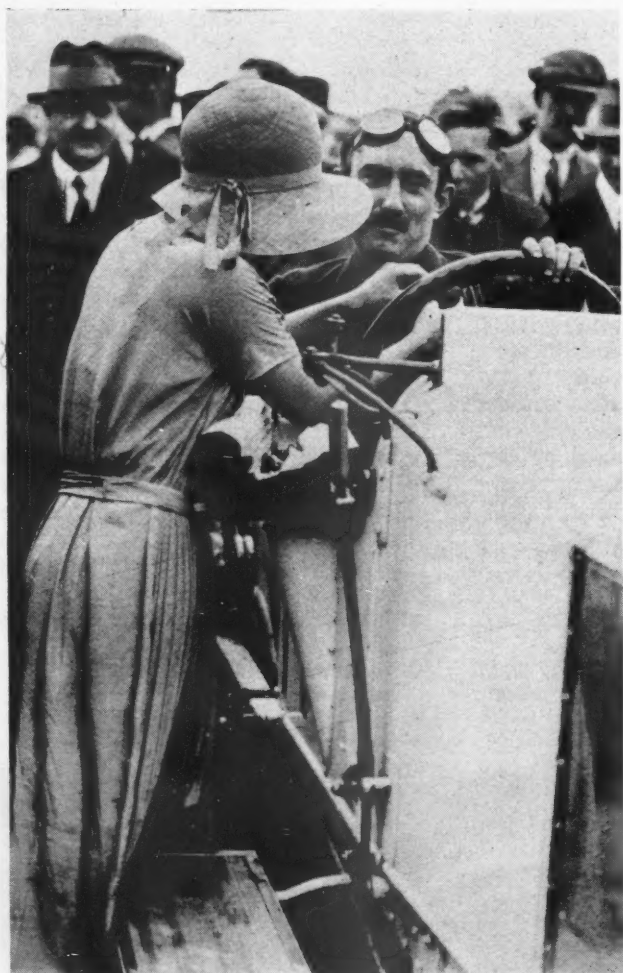




At rest . . . Ray Keech in the Triplex Special. No brakes, clutch, springs, or gearbox coupled with three 400 hp V-12 mills labeled racer as one of the deadly.



At speed . . . Ray Keech averages 207.5 eclipsing Malcolm Campbell's record. After two lucky escapes in horrible contraption, Keech refused third attempt.



Count Louis Zborowski at the wheel of Chitty-Bang-I. Under the 15 foot hood throbbed a 23 liter Maybach Zeppelin power plant.

Courtesy of Picture Post Library, London

117 mph was about the safe limit. There was just too much engine for the rest of the components. On one trial run Zborowski slammed into reverse a bit too abruptly: the gearbox literally blew up, and a chunk of its housing skyrocketed through the cockpit, coming to within micrometer distance of unfitting the Count for any more frolics in the divorce court.

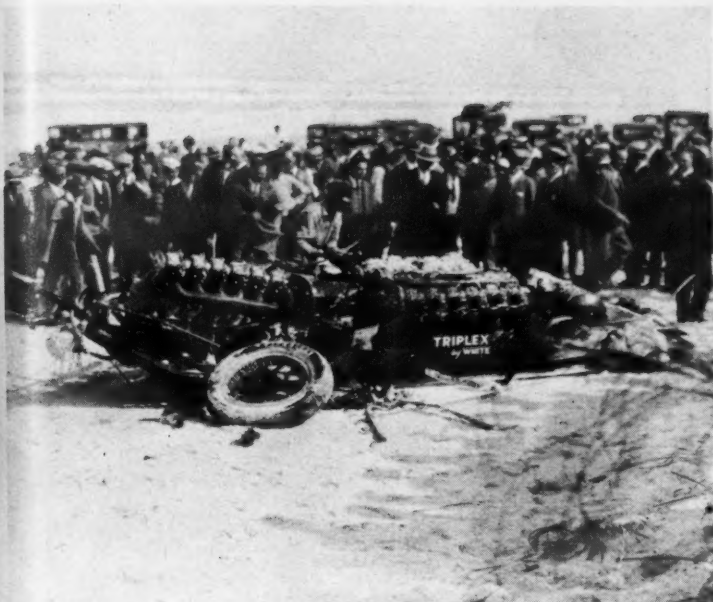
The Higham Special had a fairly good racing record, though hardly extraordinary enough to warrant all that engine power. Zborowski planned still another Chitty; this one not to be a racing car at all, but the last word in luxurious high-speed tourers: a Mercedes sedan powered by a Benz aero engine. While the project was still in the sketches-on-the-backs-of-envelopes stage, Zborowski's perfectly standard official Mercedes team car left the track and crashed into a tree during the 1924 Monza Gran Premio. He was killed instantly. His entire career behind the wheel had lasted a scant five years. In that time he managed to collect 19 convictions for reckless driving.

This was the end of Count Louis, but Chitty IV, the Higham Special, was to go on further: from notoriety to fame, and eventually disgrace, in the battle for the World's Land Speed Record.

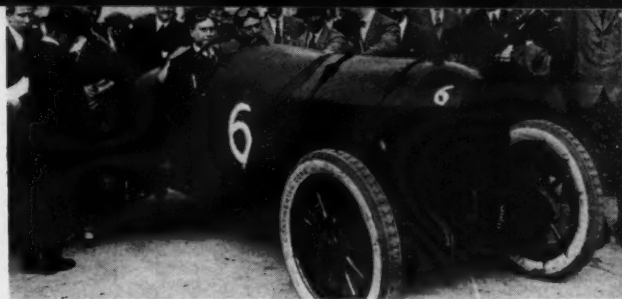
In the early days motoring's top title was almost always held by some backyard hybrid. The first of them was an ex-Nazzaro chain-drive Fiat, its chassis lengthened with pieces of a London bus, and its racing power plant replaced with a Fiat aircraft 6-cylinder engine. E.A.D. Eldridge turned up for a record attempt in this at Arpajon, France, in 1924, but French automobile club officials wouldn't let him try. They based their refusal on the fact that his car wasn't fitted with a reverse gear.

Undaunted, Eldridge hastily welded on an additional sprocket wheel, criss-crossed an extra-long piece of drive-chain over it, and presented himself and car as candidates once more. Officials eyed his new-fangled reverse, declared solemnly that it wouldn't work. "Listen," was Eldridge's classic reply, "the regulations just say there has to be a reverse gear. They don't say the reverse gear's got to work!"

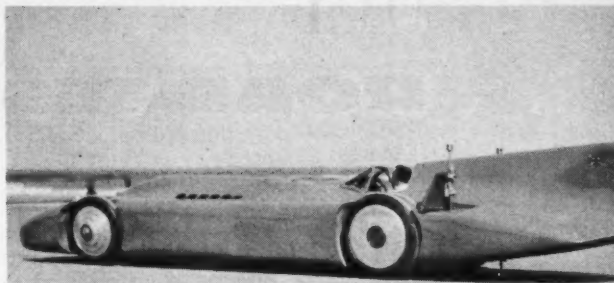
After this unanswerable argument he went on to take the record at 146.01 mph. Actually this was only a record



At rest . . . this time for good. Lee Bible unfortunately accepted this run, and was crushed to death when large hulk of iron went out of control and overturned.



Its chassis lengthened with pieces of a London bus, and powered by a Fiat Aircraft 6 cylinder engine, Eldridge machine made a 146.01 record.



The third version of the Bluebird was built from bits and pieces of Bluebird II. Car used 2200 hp Rolls Royce mill, was first to go 250.



Malcolm Campbell, ungoggled, in the original Bluebird. The aero-engined Napier upped Parry Thomas' record to 174.2.

because of administrative bickering. Ralph de Palma had come close to 150 in a Packard in 1919, and the following year Tom Milton in a Duesenberg raised the ante to 156 mph. Although Columbus had found something peculiar in the Atlantic in 1492, the news hadn't yet been verified by the snootier upper reaches of Europe's motor club aristocracy.

Whether or not Eldridge got himself a record depends on which side of the ocean one happened to be on. There is no such question about J. G. Parry Thomas, who took the record away from Eldridge, De Palma, and Milton.

One of the strangest ducks in the saga of automobilery, Parry Thomas was an electrical engineer who got shunted to work on development of gasoline engines during World War I, and afterward joined a firm that still manufactures London's big red buses.

In 1926 he bought the Higham Special — Chitty-Bang-Bang-IV — from the late Count Zborowski's estate. He replaced the Mercedes clutch that Zborowski had been using with one of his own design, redesigned the Liberty's

pistons, fitted more satisfactory wheels and tires, and renamed the car Babs. On the Pendine Sands, a beach in Wales, Parry Thomas had the satisfaction — after only a few short years of driving — of taking the World's Land Speed Record at 168.075 mph. On the following day he broke his own record, with 170.624 mph.

His record stood for almost a year, until Capt. Malcolm Campbell — he wasn't Sir Malcolm yet — in an Aero-Engined Napier, upped the pace to 174.224 at Daytona. This brought Parry Thomas back to the Pendine Sands with Babs newly tuned to concert pitch. On his first record attempt the driving chain snapped; its loose end lashed through the 3/8-inch chrome steel armor plate guard, sliced the body, and wrenched Parry Thomas's head from his shoulders.

This was the last blood a Chitty was to shed. After the legal formalities were over, a hole was dug at the scene of the accident, the car dumped into it, and covered over. It's still there.

With Parry Thomas's sudden and gory finish, the record

(Continued on page 62)

SCI

ROAD TEST:

Jaguar

XK 140 MC

Photographs by Don Typond



Trunk is long and shallow, and added length can be obtained by folding open a flap between compartment and cockpit.

RECENT owner polls and surveys have only served to underline the fact that the Jaguar occupies a unique place among sports cars. Ever since its introduction in late 1949, the XK series has set a worldwide value-for-money standard, and even American production experts have been known to wonder how they do it for the price.

Reasonable cost alone won't sell cars, though, and one tends to search further for the magic touch that has made every sports car larger than an MG a "Jaguar" in the eyes of the public. It's now an institution, on a par with Harris tweed, and its shrewd director, Sir William Lyons, has wrought this reputation by planned activity in several areas. The formula has included racing competition in the most publicized events, a calculated eye for styling and equipment, plus planned and selected sales and service facilities.

One of the most important lessons learned in nearly ten years of association with the American market has been that a good design properly promoted will long remain successful, and that public interest can best be whetted by periodic improvements both inside and out. The original XK series was well established as a sure seller, and had been supplemented by coupe and convertible models, but the domestic machines were catching up in power and speed and had trimmed the original Jaguar margin of 20 miles per hour. Experience on the circuits had taught a lot about handling, while several interior shortcomings were well known. A synthesis of all these findings appeared at the London show in 1954, in the form of the new XK 140.

For several reasons, the long and deep twin-cam six was moved forward three inches in the chassis, and a rubber-mounted rack-and-pinion steering gear replaced the old Burman recirculating ball unit. The previously special M-type high-lift cam was made standard, as was a Lucas oil ignition coil and the output of the stock XK 140 thus

The new Jag cruises comfortably between 85 and 90 mph. Steep positive caster angle at front wheels telegraphs road shocks at low speeds.



RATING FACTORS:

Bhp per cu. in.....	1.00
Bhp per sq. in. piston area.....	4.17
Torque (lb-ft) per cu. in.....	1.04
Pounds per bhp—test car.....	14.5
Piston speed @ 60 mph.....	1835 fpm
Piston speed @ max bhp.....	4000 fpm
Brake lining area per ton (test car)	137 sq. ins.

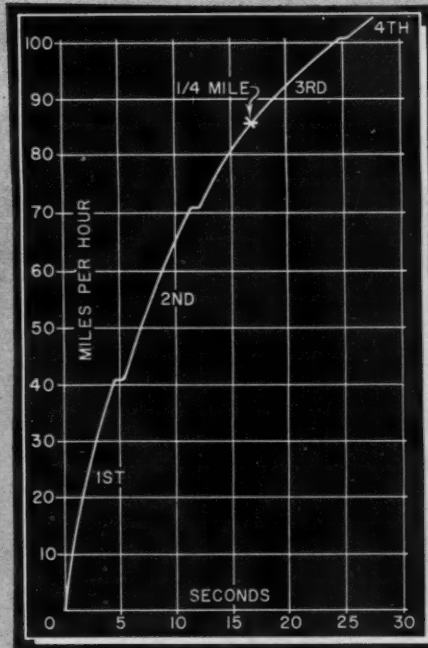
PRICES:

Roadster base price	\$3510.
Special equipment (MC) Group:	295.
Chromed wire wheels.....	150.
Overdrive	160.
Radio	95.
White sidewalls	25.
Service transportation charge	45.

jumped to 190 horsepower at 5500 rpm. To make best use of this, the gearbox was fitted with closer ratios and a slightly higher rear axle ratio was adopted. The exterior changes are easily seen, and include functional additions such as the much heavier bumpers as well as less immediately useful chrome decoration.

Again with an astute eye toward American requirements, a "Special Equipment" package was made available and was fitted on SCI's roadster test car. The "M" suffix includes dual exhausts, the wire wheels, fog lights and windshield washers, while the "C" indicates use of the C-type cylinder head and a special high-speed crankshaft vibration damper. This whole group thus constitutes the "MC" model. SCI's MC Jag, in handsome dark green, was supplied by Jaguar Cars North American Corporation, who went to considerable trouble to ensure that the car was in good condition for our test. Since many Jaguars seem to be "worn" as sporty roadsters-around-town, rather than being driven as the cars they are, we wondered just how well this suited them, and particularly this new model with its higher ratios and increased power. The answer, of course, is that the Jag will put up with it, but begins to get figuratively hot under the collar.

Thankfully the XK no longer seems to get physically hot in traffic, as a result of a larger, rearward-slanted radiator and water pump refinements. Even when the electric choke was cut in by means of the under-dash switch, starting tended to be sluggish on cold days. When warm there was no trouble, however, and idling was smooth, steady and quiet. A look at the torque curve of the C-type engine reveals a strange flat spot between 2000 and 3000 rpm, and acceleration up to the latter figure is good but not staggering. Best performance around heavy traffic thus requires active use of the clutch and the bottom two gears, which is not as pleasant as it might be.



Acceleration chart shows maximum efficient wind-out in gears. Standing quarter was clocked at 16.9 seconds, at a speed of 86 mph.



Pads on brake and clutch pedals have full foot length, though angle is a bit awkward for some people. Cockpit is snug, but adequate.



With the side curtains, and the very-hand-operated top in place, the 140 MC is effectively protected.



View of cockpit reveals seating, instruments, and leg room. Note speedometer placed on right which makes 140 excellent rally car.

The clutch pedal angles back sharply, forcing an uncomfortable contortion of the left foot, and disengagement pressure is on the high side. In compensation, the clutch action is silk-smooth and yet free from slippage even when worked hard. The shift pattern is conventional, with a positive and smooth remote control and a not-quite-foolproof spring latch for the left-hand reverse gate. First gear can be engaged silently from rest if the lever is first moved briefly into the second gear synchromesh, and if the car is rolling slowly first can be picked up directly without a sound.

Movement of the short lever to second gear traverses a wide arc, and in combination with a rudimentary degree of synchronization this is a very slow shift. Low gear should be used for smooth starts, and will carry the car well beyond any in-town speed limits, while second will bring you right up to highway cruising speed. If the town traffic is heavy with a lot of stop-and-go driving, you will note that the right foot must be pulled well back to get on the brake, while the special hard linings fitted to this particular car called for markedly high pedal pressure. A screened opening in the backing plate admits air to the front brakes, as well as water during rainy driving, and when the shoes are wet their behavior is anything but predictable. This is embarrassing in close company, and plates are available to seal up these vents when cooling is not a prime consideration.

An overall length of fourteen and a half feet and a weight of a ton and a half point up the fact that the Jaguar is not a small car, and it confers few advantages in maneuvering and parking. It does score highly for its very tight turning circle, which makes it surprisingly potent in gymkhanas. The shift of engine weight toward the front and the retention of the old caster angle on this car of $2\frac{1}{2}$ to three degrees positive have caused the steering feel at low speeds to be distinctly heavy and potentially tiring. There is, of course, no play, and the strong springy return action of old Jaguars is still present.

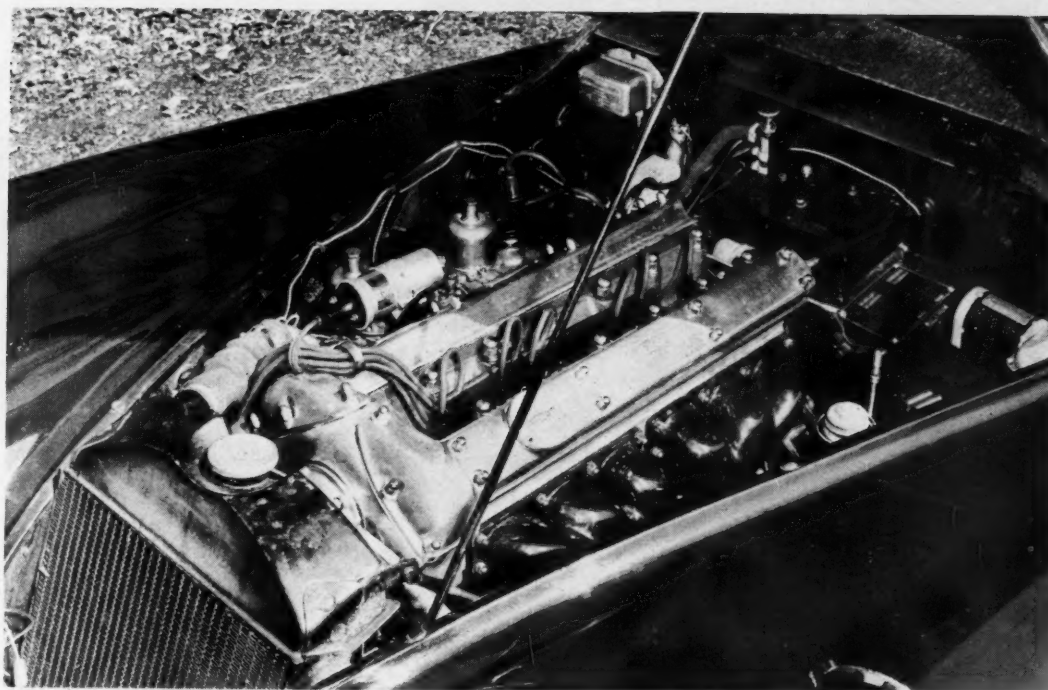
The high caster, we were told, also contributes to the sometimes annoyingly insistent road reaction transmitted to the wheel by the fully reversible gear. Not restricted to any speed range, this occasionally sets up oscillations way out of proportion to the road ripples, and according to the representatives can be reduced by cutting the caster to $1\frac{1}{2}$ degrees positive and altering the ball joint seating.

At low speeds and in traffic, then, the Jaguar calls for a strong hand behind the wheel, and does not appear at its best. As the road opens out and the lever can be moved across the gate to third, the MC enters its area of greatest competence. Movement between third and fourth is short and neat except for a fallible synchro on third, which is quieter than the other indirects and yet has a pleasingly mechanical whine that is part of the car's appeal. At high revs this is echoed under the hood by the dual cams and their chain drive, which have a similar machine-like whir. The familiar sophisticated Jaguar exhaust purr is heard only under wide throttle, and with some restraint the car's high performance can be used fully without advertising the fact (The old M's *did* sound nice, though).

Fame has deservedly come to the XK engine for its rigidity and smoothness, which derive from the size of the seven main bearings and the stiffness of their supports and the crankshaft. In this department, it is utterly uncanny for an engine of this size, and this feeling of solidity plus the instant response to the throttle encourage free use of the gears and the revs. As mentioned before, this is fortunate since the C-type head doesn't get a real foothold until the 3000 rpm mark is passed. Beyond this point in second and third gears the nose comes up and the roadster begins a relentless rush forward. Third gear with its maximum around 100 is particularly nice and just right for position-

(Continued on page 56)

Although its new position is not discernible, twin-cam six was placed three inches forward on chassis. Note inclined radiator, and enameled exhaust manifold. Fuel feed is through two SU's of horizontal design.



SPECIFICATIONS

JAGUAR XK 140 MC ROADSTER

TOP SPEED:

Two-way average.....	121 mph
Fastest one-way run.....	124 mph

ACCELERATION:

From zero	Seconds
30 mph.....	3.0
40 mph.....	4.5
50 mph.....	7.1
60 mph.....	9.1
70 mph.....	14.8
80 mph.....	18.8

SPEEDOMETER CORRECTION:

Indicated	Actual
30.....	29
40.....	39
50.....	50
60.....	61
70.....	71
80.....	80
90.....	90
100.....	101

FUEL CONSUMPTION:

Hard driving.....	11.5 mpg
Average driving (under 60 mph).....	18 mpg

BRAKING EFFICIENCY

(10 successive emergency stops from 60 mph, just short of locking wheels):

1st stop.....	66
2nd stop.....	63
3rd stop.....	58
4th stop.....	67
5th stop.....	63
6th stop.....	62
7th stop.....	59
8th stop.....	63
9th stop.....	62
10th stop.....	59

SPEED RANGES IN GEARS:

I.....	0-41
II.....	11-70
III.....	17-101
IV.....	21-121

POWER UNIT:

Type.....	6 cylinder, in line
Valve Arrangement.....	inclined OHV, twin overheads cams
Bore & Stroke (Engl. & Met.).....	3.27 x 4.17 in. (83 x 106 mm)
Bore/Stroke Ratio.....	1/1.28
Displacement (Engl. & Met.).....	210 cu. ins. (3442 cc)
Compression Ratio.....	8 to 1
Carburetion by.....	2 horizontal S.U.
Max. bhp @ rpm.....	210 @ 5750
Max. Torque @ rpm.....	218 @ 4000
Idle Speed.....	650 rpm

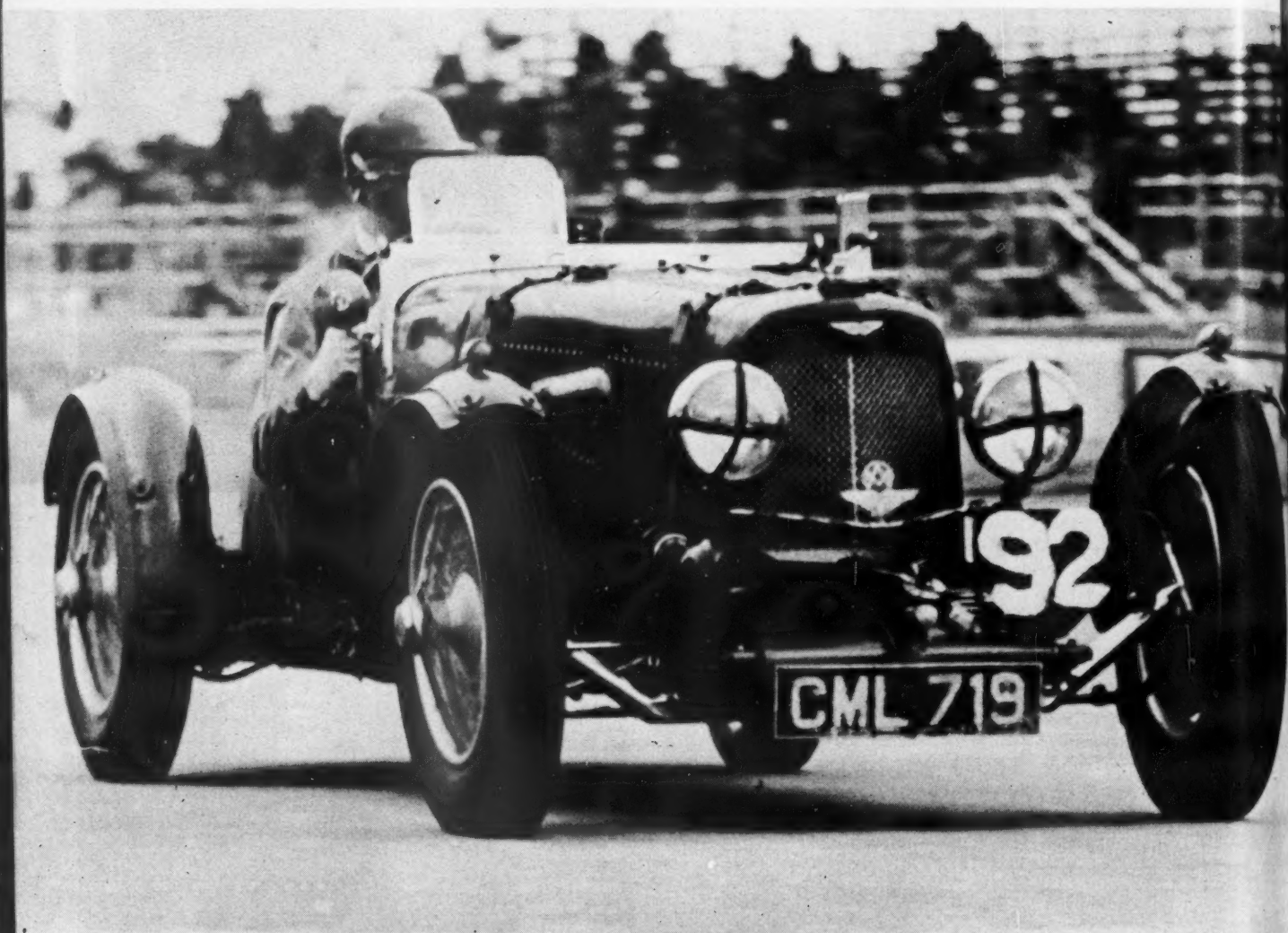
CHASSIS:

Wheelbase.....	102 ins.
Front Tread.....	51 ins.
Rear Tread.....	51 3/8 ins.
Suspension, front.....	Unequal length wishbones, torsion bars
Suspension, rear.....	Live axle, semi-elliptic leaf springs
Shock absorbers.....	Girling tubular
Steering type.....	Rack and pinion
Steering wheel turns L to L.....	2 3/4
Turning diameter.....	33 ft.
Brake type.....	12 in. pressed drums, 2 LS front
Brake lining area.....	208 sq. ins.
Tire size.....	6.00 x 16 (Dunlop Road Speed)

GENERAL:

Length.....	174 ins.
Width.....	62 ins.
Height (top up).....	52 1/2 ins.
Weight, test car.....	3040 lbs.
Weight distribution, F/R.....	50/50
Fuel capacity—U. S. gallons.....	16 3/4

The Ulster, now better than twenty years old, pushes a fair pace at a club race. Note dihedral line of dropped axle. Reservoir for dry sump sits behind lowered pan in front.



Dreadnought

Practically indestructible, the classic Aston Martins could go flat-out for hours—if only you could get them to climb out of the dents they made in the pavement

By DENNIS MAY

A LITTLE THING like inertia never scared A. C. Bertelli and W. S. Renwick, co-designers and builders of yesteryear's classic Aston Martins. If they ever picked their teeth they probably did it with a crowbar. Taking weight and sheer brute strength as a measure of merit and moneysworth in an automobile, Bertelli and Renwick were philanthropists rather than businessmen. Their 1½ liter Ulster model, a sports racing two-seater of the 1934/36 era, weighed 2075 pounds. The 1500 cc edition

of today's Mk. XI Lotus, built for the same purpose, weighs around 900 pounds. An Ulster was as indestructible as the *Queen Mary*, and went off the mark about as fast.

Aston Martins and Frazer-Nashes, being roughly comparable in price and equal in displacement, were often matched in short speed events, so a natural rivalry developed between the two fancies. Seven times out of ten, just so they kept their chains on the sprockets and didn't get more than one gear in at once, the 'Nash faction won

these skirmishes in the first furlong. They owed this superiority, of course, to their lighter weight and low-friction transmission through multiple chains. As a rueful Ulster operator once was heard to remark, "I could keep up with the sonsabitches easily enough if I could only climb out of the dents the Aston makes while we're waiting for the flag."

Not that the disciples of Messrs. Bertelli and Renwick were less devout in marque worship than the F-N crowd. If a laggard take-off was the price of unburstability, then they paid it with a good grace. It was a smaller price anyway, they consoled themselves, than the Chain Gang had to pay for a flashy getaway; an Aston, with its respectably orthodox transmission arrangements, at least was never likened to a piece of farm machinery, or four motorcycles buttoned together.

If it came to that, resourceful owners could always devise their own slimming formulae to improve the homely power-weight ratios that satisfied the little factory at Feltham, near London. The length to which these reducing treatments were sometimes taken was well illustrated by a do-it-yourself article published some years back in *A.M.*, quarterly magazine of the Aston Martin Owners' Club. Here are a few of the departments in which the author, by variously drilling, grinding, filing, junking, local redesigning and the substitution of light alloy parts for ferrous or brass originals, scored economies, with specific savings indicated: Chassis cross-ties, 22 pounds; starter shaft, 3 pounds; engine drain plugs and control rods, 3 pounds (main elements of the A.M. engines were surprisingly light); oil tank, 8 pounds; front axle and hubs, 6 pounds; instrument panel and bulkhead assembly, 45 pounds; fuel tanks, 20 pounds; mirror mounting, door fittings and windshield frame, 8 pounds.

Considering that the writer was prepared to replace the glass in the headlamps and instrument dials with Perspex (British equivalent to Plexiglass), it was disillusioning to find him daunted by the body shell. Here, his only suggestion was to "throw it away and start again." For coolie tasks like perforating the chassis rungs with a boiler cutter,

t Astons

he put his wife to work.

But before the idea gains ground that the standard Astons of the 30s were so sunk in lethargy as to be virtually useless for speedwork, it must go on record that, on the contrary, they had a priceless reputation for maintaining a fast rate of knots for long periods without breaking. Only two makes of 1½ liter car have ever finished in the first three at Le Mans, and Aston Martin was one of them. True, a Riley of this capacity placed second in 1934, whereas A.M.'s best was third the following year; but the Aston's speed average, despite its lower placement, was well above the Riley's, and in fact set a 1500 cc distance record that wasn't beaten until 1950. The same car — legendary LM20, now in honored exile in Australia — again won the 1500 cc class in 1937, catching fifth place on general order. If the makers hadn't sold it to a private owner in the meantime, its 1937 performance would have entitled it to the Rudge Whitworth Biennial Cup. For years, Aston Martin were the only make with three Biennial Cups on their sideboard.



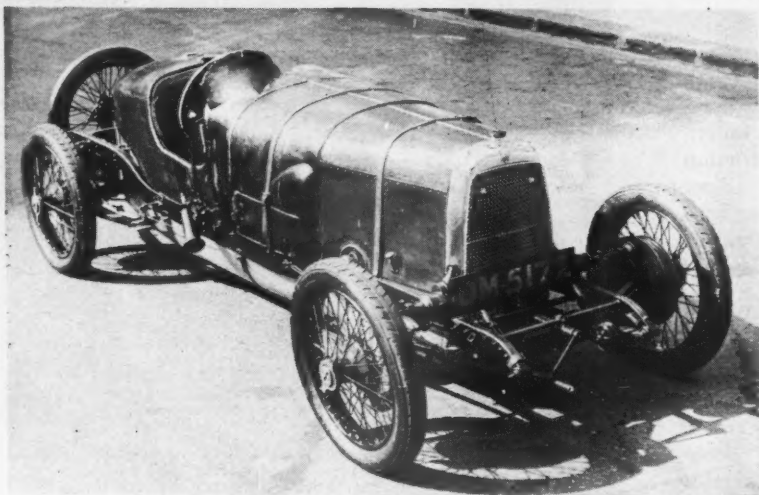
Front view of the International 2-4 seater. Primarily built for two, the car had auxiliary seats for two extra passengers. Wheel-mounted fenders were A-M trademark.



Two well preserved Ulsters prepare to jump off the mark. In '35 an Ulster placed 3rd on general classification at Le Mans setting 1500 cc distance record lasting until 1950.



Prewar AM rebodied to resemble the postwar sports racing 2 liter Aston. Although body is early postwar, chassis isn't.



This 16-valve job, lost for decades, was discovered and re-built in '51 by Lord Charnwood, one of the car's co-designers.



A modified 2 liter Speed model circa '36-'37 buzzes along happily in a postwar airfield meet. Its power came from a single-cam four-barrel. It was more an heir to Aston good looks than to Aston performance.

They also won their class in the 1935 Mille Miglia.

Whoever was responsible for model designations at Feltham pre-war did a conscientious job of making everything as confusing as possible. The so-called Le Mans model, by this token, was dying on its Dunlops by the time the marque really started making Sarthe Circuit history — the big Le Mans plums falling to the Ulster type. The Ulster, on the other hand, did not greatly distinguish itself in Ulster — meaning in the Tourist Trophy — aside from one third placement and a team prize. (The T.T. being a handicap, all classes had a theoretically equal chance, so a third place, even in the company of such hairy armament as $3\frac{1}{2}$ Bentleys and 57S Bugattis, was something less than miraculous.)

Aston Martin also conformed to Frazer-Nash tradition in combining a minimal output with a profusion of type names and marks, perhaps hoping to sell Feltham as a cross between Willow Run and the Red October. Although the Ulster, for example, yielded and is still yielding a legend and a gospel of a volume possibly surpassing the combined literatures of Morris and Hillman, the statistical fact is that only twenty-one Ulsters were ever made. Nevertheless, let's don't grudge this classic its big prose ration. In its day and in its way it was a great car, even if it would have

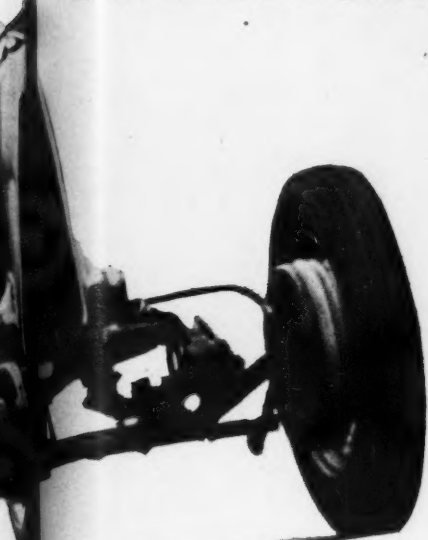
melted down into roughly 2.2 Lotuses.

The pre-war history of Aston Martin falls into two main chapters, the Bertelli-Renwick phase coming second. The first was the Bamford and Martin chapter, ranging from 1921, when the make was born, until 1925 inclusive. Then, following a short interregnum, Bertelli and Renwick bought the assets and goodwill and resumed production under the old name in 1927. Incidentally, they were on the point of calling their new baby the R. and B. Special, but thought better of it.

Although Bertelli-Renwick engineering was by no means bankrupt of imagination, it had nothing on some of the earlier designs created — or occasionally borrowed — by the men who worked under Bamford and Martin. One of the most singular of these was an ohc engine in which the camshaft and the valve nests were at relative levels reminiscent of the old Elevated and the sidewalks of Third Avenue. Interposed between them were short push-rods which, with light assistance from gravity, operated downwards.

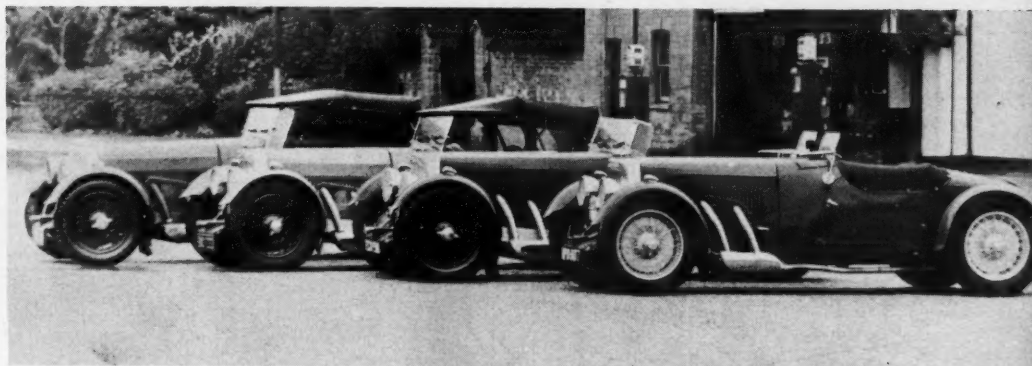
This was the first ohv plant ever built by A.M., and had four 65 by 112 millimeter cylinders and four valves per cylinder. A dim performer, it was made over into a twin-camshaft sixteen-valver, with the valves inclined at 60 de-

The famous Razorblade. This historic single seater with the 16-valve Gremillion engine built in 1923 still contends at the A-M owner's club meets.



"Bunny", most famous of Aston L-heads, broke ten world records in 1922 despite its tank-like weight and poor acceleration. Among the engine features were heavy steel pistons running off a hollow crank.

Four Mark II, 1½ liter Astons wait patiently while owners down a tankard of ale at a roadside tavern. Most Bertelli cars had 2 pipe external exhaust.



grees to each other in a nondetachable head, by a young Frenchman called Marcel Gremillion. The name Gremillion, in fact, stuck to the inclined-valve job, although it could more appropriately have been tagged Ballot, or Henry. Gremillion was a *protégé* of Henry, the great Swiss designer, and the blueprint that the enterprising Marcel sold to B. and M. was simply half of a 3 liter Grand Prix Ballot, created by Henry.

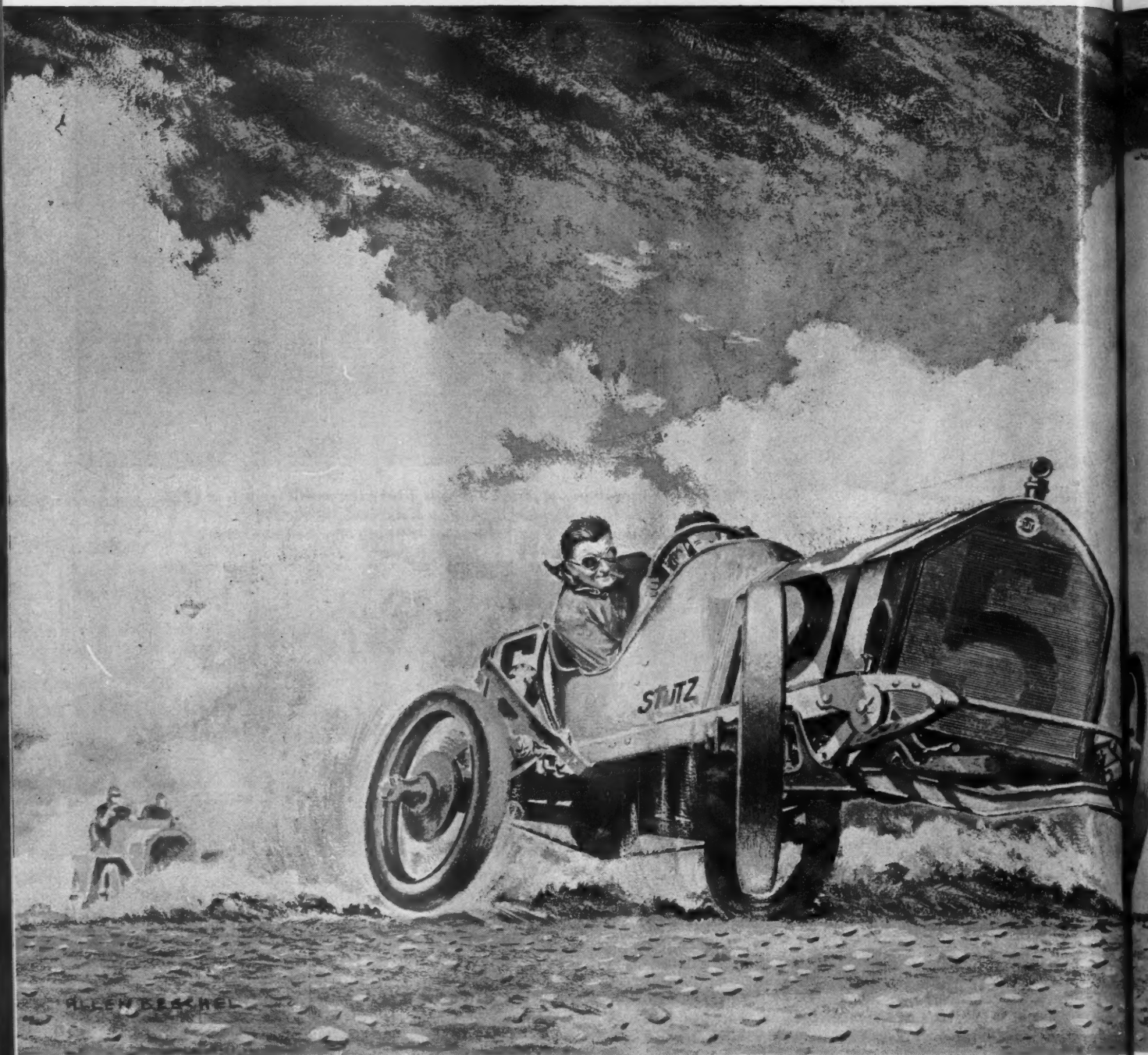
One time or another, all manner of people got into the designing act for Bamford and Martin, including Cecil Kimber, who was later to found the house of MG. Another and more important contributor was an aristocrat with an oversquare brain called John Benson, who afterwards became Lord Charnwood. Benson, in 1925, produced a twin-ohc engine with two valves per cylinder — largely anticipating the W. O. Bentley design which has been the kernel of every David Brown A. M. built since 1949.

Though sometimes idiosyncratic in detail by modern thinking, the Astons of the Bamford and Martin generation were scrupulously made, exhaustively developed and rigorously tested. Lionel Martin and the Hon. John Benson personally put every car through its paces before the customer took delivery. Engines were run on the bench for twenty-four hours, then dropped into their chassis and

driven 500 test miles on the highway. Since the total Bamford and Martin output, racing cars and guinea pigs included, was only around sixty cars during the partnership's five-year lifespan, this ambitious proving program did not overstrain the resources of the homey little A.M. establishment at Kensington, in south-west London. (The move to Feltham wasn't made until Bertelli and Renwick took over).

Lionel Martin, a big, bluff, ruddy faced fellow, conceived the idea of making cars of his own in a mood of exasperation with the defects of cars other people had made. Prior to the first world war he had been a famous hillclimb and sprint driver, operating Singers. Possessed of a toe that was fantastic without being light, Martin regularly gave his Singers more punishment than they could take. A coolness consequently developed between him and Singer, and finally he solved his problem by washing his hands of their product and constructing a hybrid sprinter of his own on the basis of an Isotta Fraschini chassis and a 1400 cc Coventry Climax engine — distant forebear of the mill which today powers the Cooper and Lotus sports-racing and Formula II lines.

(Continued on page 52.)



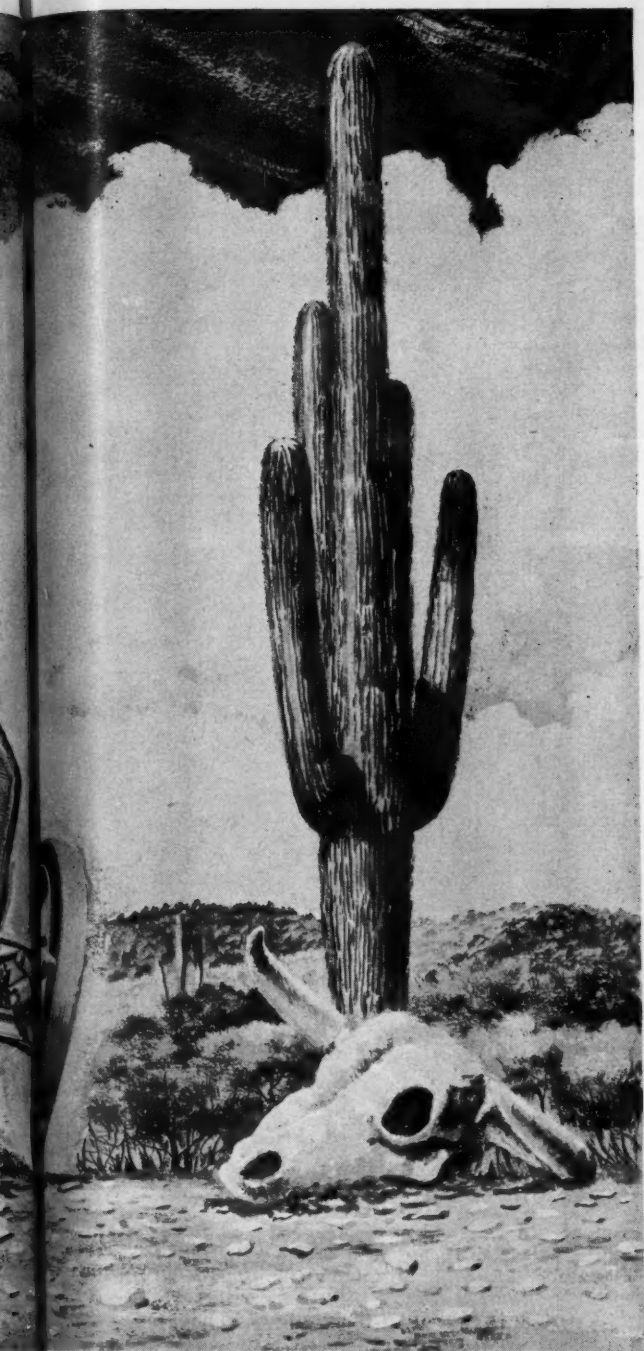
Grand Prix of the

*Running right across the
Colorado desert from
Los Angeles to Phoenix, the
Cactus Derby was 480 miles of
unadulterated, car-busting hell*

• J. L. BEARDSLEY

THEY don't make cars the way they used to, and it's probably just as well. They don't make races the way they used to either, and it's *certainly* just as well. Take as a shining example the Los Angeles-to-Phoenix Road Races, held annually from 1908 to 1914, which proved conclusively that Lacrosse is for girls, and collegiate football belonged in the Domestic Science department.

Inaugurated by the Automobile Club of Southern California as part of their campaign for better roads and automobiles, this "Cactus Derby," as it was dubbed by newsmen, was the most punishing test of modified stock



e Desert

machines ever devised, even in an era when 100 road races were run yearly in this country alone. The finish was usually scheduled as a feature of the Territorial Fair at Phoenix, but before Phoenix was reached, the contestants had to go through some of the worst driving conditions since the Athens-to-Sparta Blindfold Chariot Race. Among the features of this sagebrush classic were silt, sand, and alkali dust, bridgeless streams, hostile Mexican bandits, wild animals, and a complete absence of road outside California. All this for 480 miles, and you begin to wonder: "What's the rush?" Apparently, there wasn't any rush,



A Buick roars away from the start in a cloud of dust. Cars were started one at a time in Cactus Derby.

since the first race was won by Col. F. C. Fenner, in a White Steamer, at the breakneck average speed of 17.6 MPH. We must consider the year, the machine, and the conditions, though, and give the old boy full credit for finishing at all. Another entrant in the 1908 event, Ralph Hamlin, elected to drive the race without a guide and became seriously lost. He did finish eventually, but by that time everyone had probably gone home.

The second running went off on November 6, 1909. There were twelve entries loaded with supplies, fuel, tires, repair equipment and cyclone insurance. They left at five-minute intervals, cheered on by 50,000 spectators lining the streets of suburban Los Angeles—a formidable piece of territory in itself. Among the daredevils were such names as Joe Nikrent (Buick), Bert Latham (Studebaker), C. L. Harris (Ford), Guy Irwin (Franklin), Harris Hanshue (Apperson), Max Persman (Isotta-Fraschini), George Dake (Elmore), W. R. Harrison (Dorris), H. Stone (Columbia) and W. L. Vail (Pennsylvania). The cars they drove are perhaps more familiar to us today than the drivers, but these were real men, and they should have a special place in history.

The first 109 miles were fine-miserable by today's standards, but deluxe in comparison with the rest of the course. Beyond Whitewater, and to Palm Springs, deep washes and powdery silt set in. The going really got rough, though, after Indio, where the road became a trail across 94 miles of the Colorado Desert. Here ruts led through fine silt, gullies with sheer sides, dry stream beds strewn with boulders, and rocky and sandy grades. Water was available at only two places, and the nearest comfort station was in Illinois.

Alkali dust built up a fierce thirst, the glaring desert sun did what it could to help out the hot engines. The drag on the tires was so great that these panting power plants had to work fulltime, even, in some cases, on the downgrade. Bucking the fine silt in low gear only made the wheels dig in deeper. Backing up and using intermediate helped sometimes. The rest of the time, they proceeded by sweat and shovel.

None of the entries lucky enough to reach Phoenix arrived without serious mechanical damage. The first accident happened before the field had reached San Bernardino. The start was at night.

Rose, co-driver of the Elmont, was blinded by the headlights of a car on a side road. He crashed into a cement culvert. He lost all his equipment and provisions, but, undaunted, he righted his car and sped away.

Vail, in the Pennsylvania, roared out of the darkness, became involved with the flotsam and jetsam of Rose's mishap, and sheared off a brake pin. He was followed by Stone, in the Columbia who cracked his frame. It makes one wonder what Rose was carrying.

(Continued on page 64)



SCI Technical Report:

On early shakedown run, Martin Tanner wheels Special behind full-width screen. Smaller racing version will be fitted for '57.

Fabulous Featherweight

By KARL LUDVIGSEN



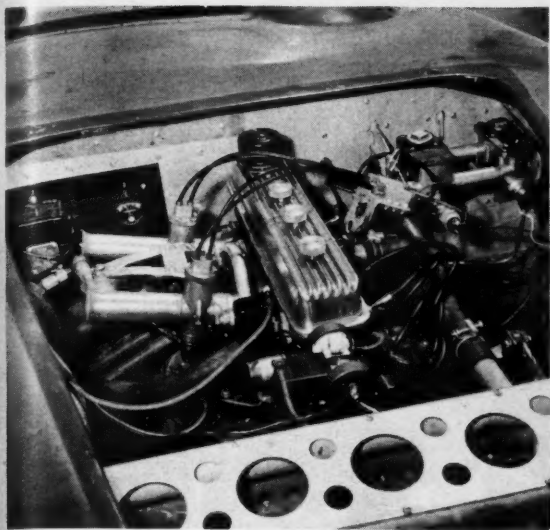
The Uhlenhaut-Chapman of this venture, Tanner deftly dismounts grille prior to removing one-piece body shell. Superb workmanship marks whole machine.

WE DON'T want to belittle the efforts of special builders in general. Nor do we feel that we're saying anything new about car designers as a breed. Both history and the object at hand illustrate the adage that the finest machines roll off the boards of men who are fundamentally artists.

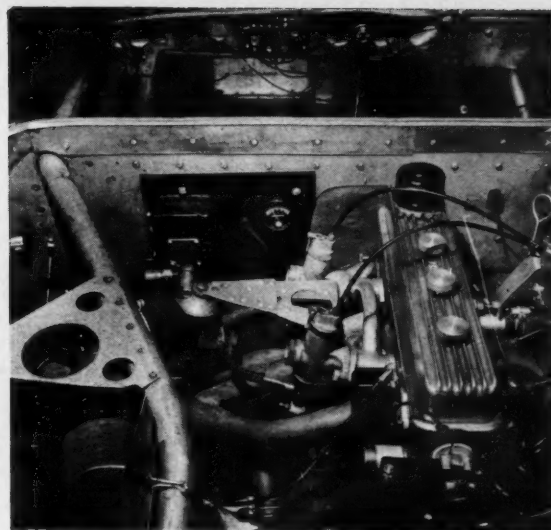
The great talent of the artist is his all-seeing eye, and his resulting ability to visualize the car as a whole. This done, he can see his way to a clear, logical solution. Structures that are correct to the unromantic gaze of the engineer are very often handsome aesthetically, while the opposite is also frequently the case. One quick way to verify this is to rip the skin off a going machine of any category.

It's likely that its guts will be a pleasure to the eye, perhaps more so than the bodywork. Conversely, we often say, "If it looks right, it is right."

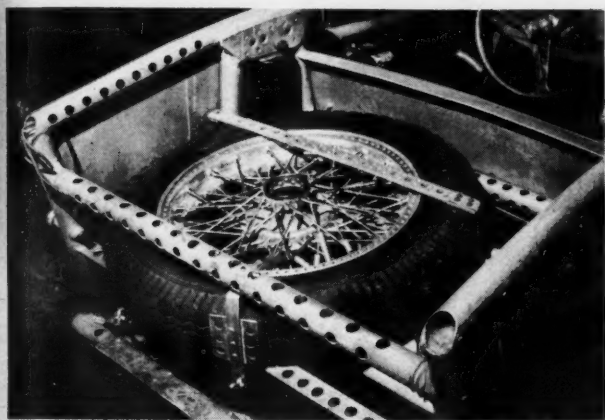
Martin Tanner would be the last man in the world to suggest that he possesses a spiritual kinship to Ettore Bugatti, but the evidence is clear and the comparison cries to be made. Tanner is a top advertising executive in Saginaw, Michigan, with no engineering training as such, who was nevertheless able to put together one of the best-integrated specials we've seen. He did it with the intuitive guidance of an active, creative artistic background, which, of course, has always been a characteristic of Bugatti's life and works.



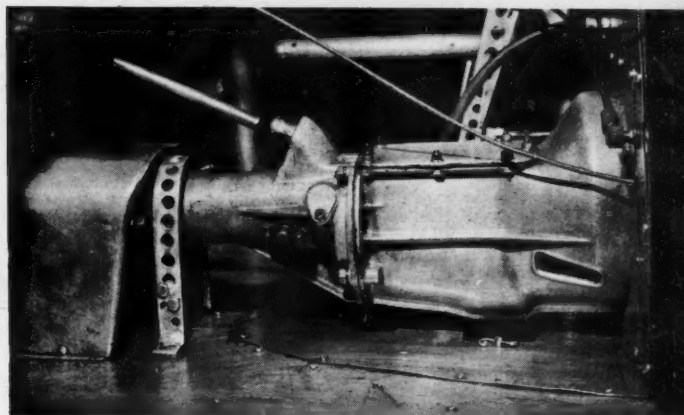
First Crosley engine layout had 1½ inch Amals, complete with cycle-type choke controls. Twin alloy master cylinders for brakes and clutch are at right.



Development brought switch to one-inch carbs, without chokes. New ram tubes hadn't been made up yet. Support for SU float bowl was redesigned to improve stiffness.



Drilled just past the points where suspension stresses act, the aluminum frame is beautifully finished. Spare wheel mounting is simple, yet rigid and positive.



Fiat 500 gearbox is light and simple, has been further refined with aluminum cover plates. Small Dzus-fastened plate in belly pan facilitates oil changing.

After a period of experimentation with an Austin-Healey, Martin decided that his best course would be to design and build a machine of his own, to get the desired combination of go and show. His ability to visualize and plan on paper paid off in full during the planning stage, which consumed half a year of spare time.

Once the main components were chosen, on the basis of potential usefulness and availability, initial layout drawings were made to scale. These were later expanded to full-size views of the entire car. The wheelbase, in fact, was a function of the available drawing board length. At the same time, a full-scale chassis mockup was constructed of suitable chunks of cardboard tubing.

Tanner strongly recommends this mockup stage, especially for machines in the small displacement classes. It's lots easier to find crannies to tuck in odd parts that way, and far cheaper to make mistakes in cardboard than in magnesium. The body was planned right along with the chassis, and the final contours were put on record in a scale model. Naturally, when the parts themselves were the issue at hand some further adjustments were needed, but thorough planning greatly simplified a potentially complex job. Actually construction took only a month longer than the paperwork, and flew along without a single serious hitch.

Many unusual methods are used throughout the Martin-T,

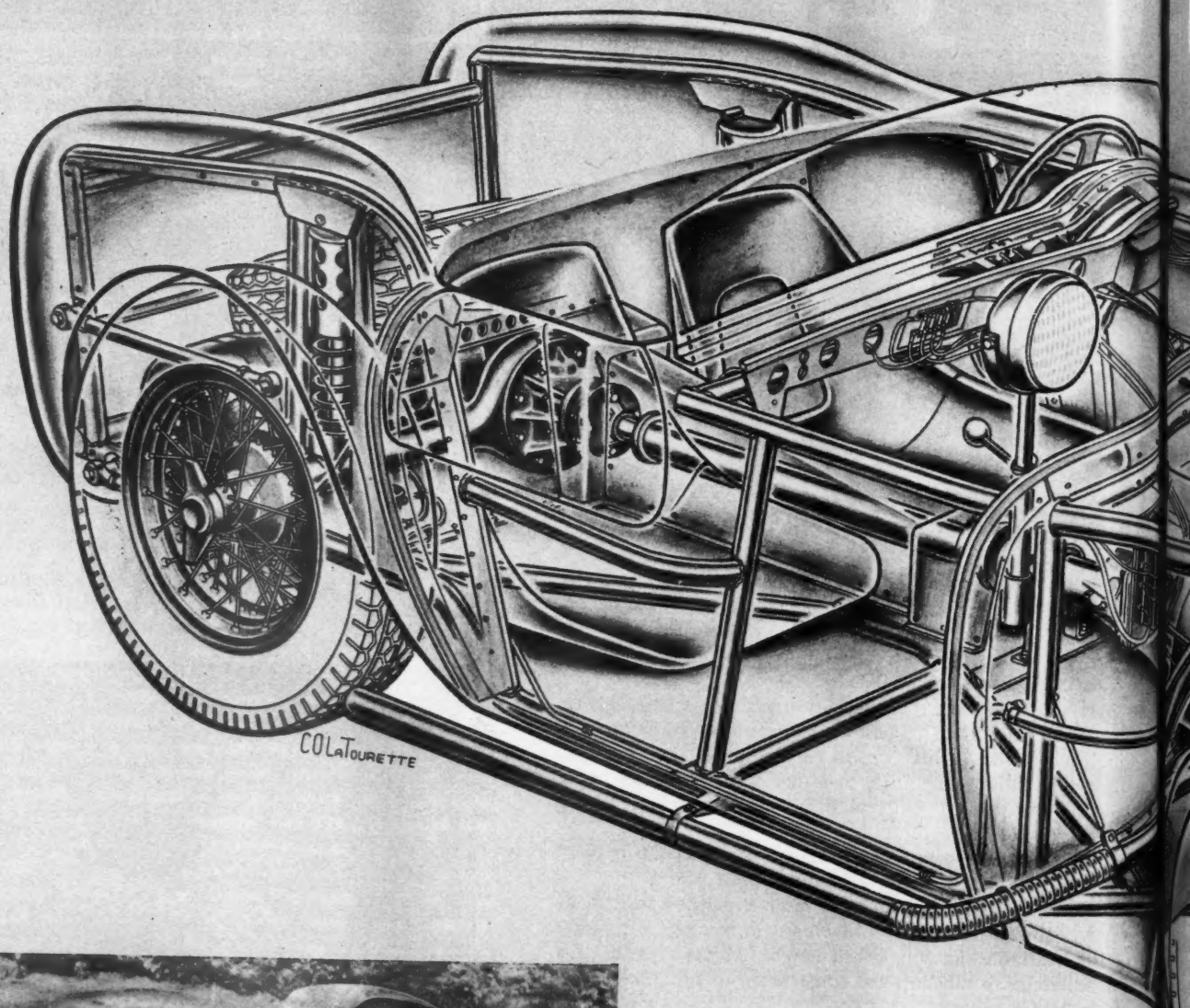
but overall the most striking attribute is the use of light alloys in every conceivable place. Literally, the only use of ferrous material is in moving parts for drive and suspension, plus the supports for those moving parts. In other words, only where the stresses make it mandatory. Needless to say, this required a fantastic amount of detail research.

It all really started with a steel tube frame built up by Johnny Camden of Utica, Michigan, to take Fiat 500 running gear and the popular Crosley engine. Martin acquired this, deciding after study that it was too heavy but would serve well as a general pattern for another try. The final big-tube frame resembled the Camden job in overall shape, but certain angularities were smoothed out at the front and rear, the final contours relating closely to the body shape.

Frame material is 6061-T6 aluminum, a very tough grade, and was Heliarc welded throughout. The bottom platform was first made up from 1½ inch OD tubing, with .085 inch wall thickness. Verticals were then erected of 1½ inch, .050 inch wall tubing, and connected by the intermediate fore-and-aft members. Finally the top tubes, of 1½ inch stock, were placed atop the verticals. The latter tubes are thus cut to fit the main longitudinal members, which can retain their full strength. Total frame weight is 65 pounds.

A very stiff structure of wide-spread tubes resulted, each one placed to contribute to frame strength and also to sup-

Martin-T Crosley—the latest lightweight



MARTIN-T CROSBLEY SPECIAL SPECIFICATIONS

POWER UNIT:

TypeCrosley in-line four
Valve ArrangementSingle overhead cam
Bore & Stroke (Engl. & Met.)...2.50 x 2.33 ins; 63.5 x 59 mm.
Stroke/Bore Ratio0.93/1
Displacement (Engl. & Met.)...45.7 cu. ins; 748 cc
Compression Ratio10.25/1
Carburetion byTwo one-inch Amals
Max bhp @ rpm45 @ 7000

VALVE TIMING:

	opens	closes
Intake	22 degrees BTC	65 degrees ABC
Exhaust	62 degrees BBC	20 degrees ATC

VALVE CLEARANCE:

.014 inch

SPARK PLUGS:

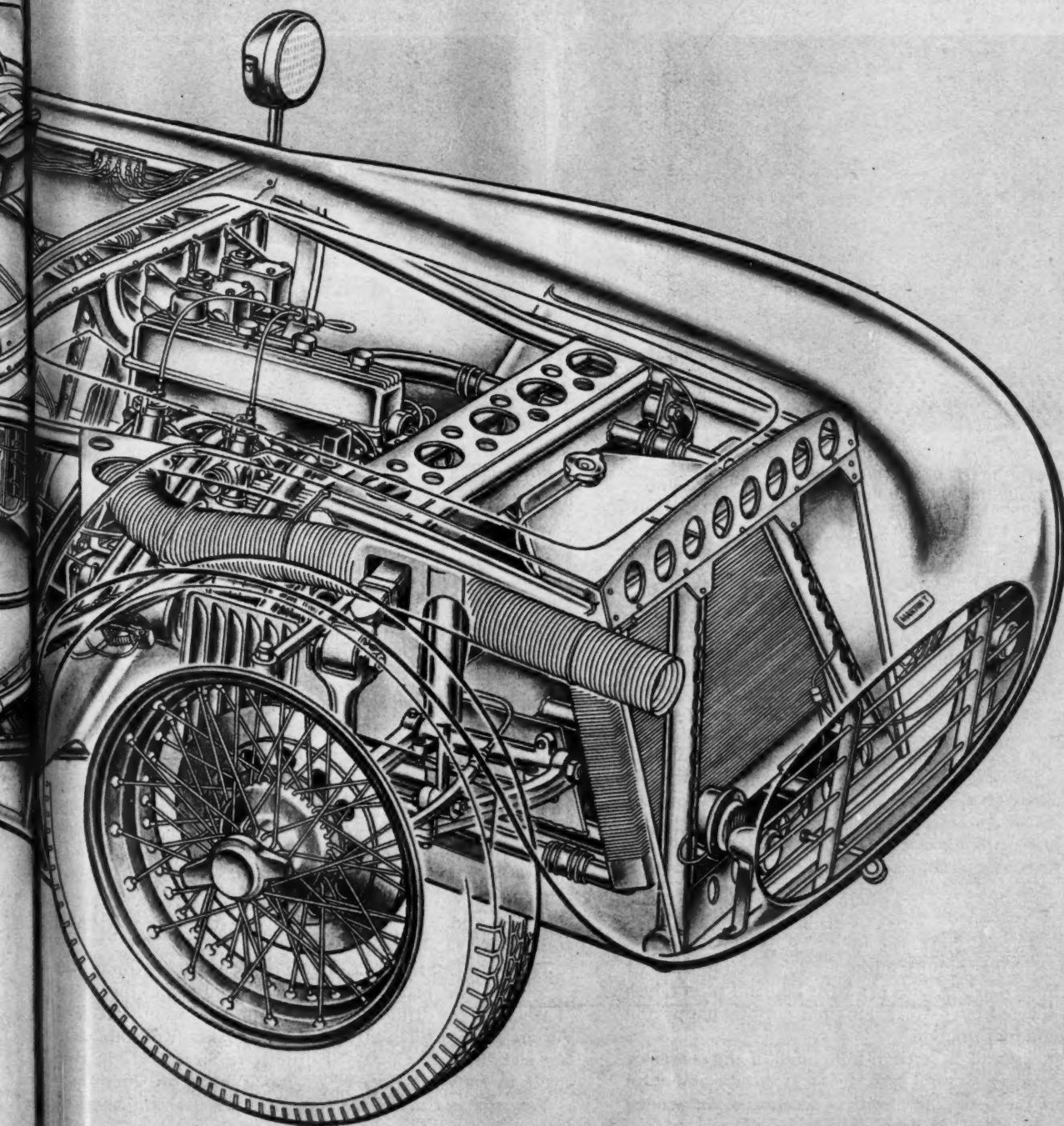
KL6 FE50

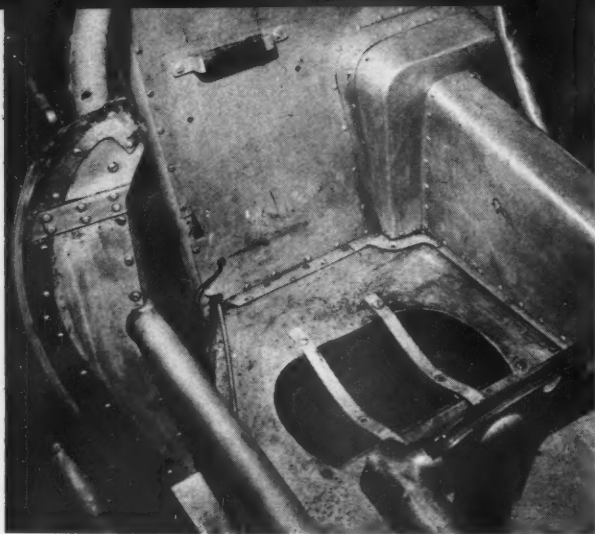
DRIVE TRAIN:

Transmission ratios I.....4.47
II.....2.73
III.....1.71
IV.....1
Final drive ratios4.87, 5.84
Axle torque taken byRadius rods

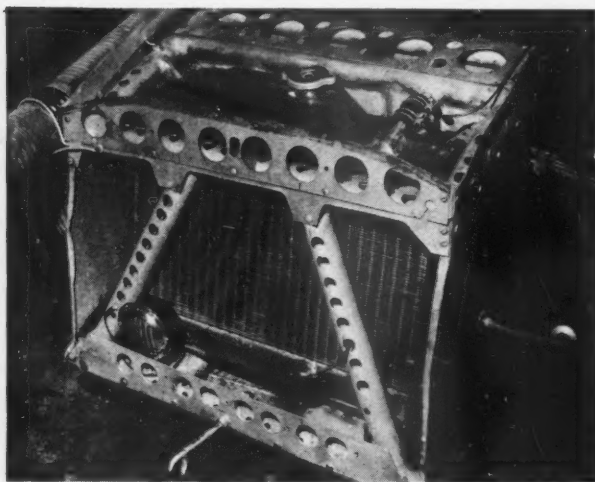
CHASSIS:

Wheelbase82.5 ins.
Front Tread46 ins.
Rear Tread45 ins.
Suspension, frontFiat 500 transverse leaf and wishbone
Suspension, rearCoil springs, parallel radius rods
Shock absorbersGabriel Ajust-O-Matics
Steering typeFiat 500
Steering wheel turns L to L2 3/4
Brake typeFiat: 1100 front, 500 rear
Tire size4.25 x 15
Weight dry720 lbs.
Fuel capacity5 U.S. gallons

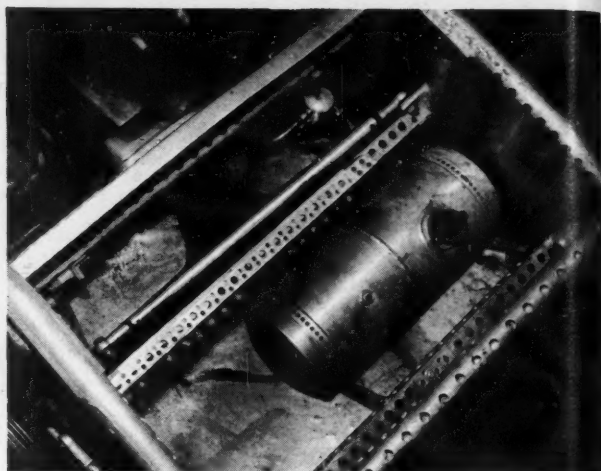




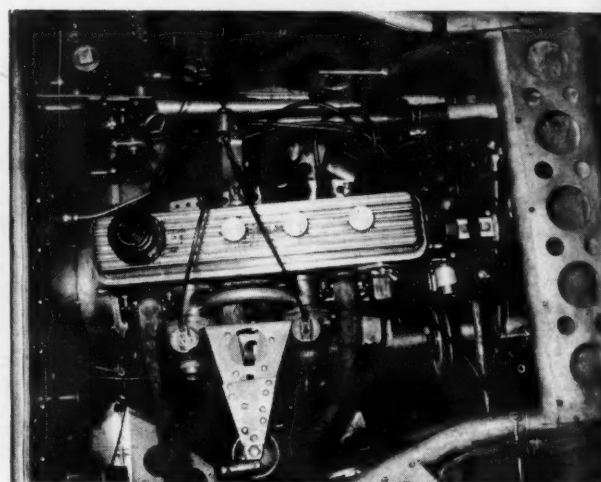
Stressed center section uses magnesium sheet in all non-shaped areas. Screws are used for attaching to frame tubing. Hole in floor gives seat location.



Heft of towing hook attests to weight of Martin-T. Cool air duct is at left of special Jeep-cored radiator, and drilling is again evident.



With spare removed, Moon fuel tank, Bendix pump, and Fiat axle with transverse locating rod are accessible. Coil-damper units ride vertically at each side.



Fabricated of steel and aluminum, manifolds are held down by special serrated nuts. Below spark plugs, drilled angle for engine mounting can be seen.

port as many other parts as possible. Where requirements weren't critical they were drilled, and at high-stress areas, as over the front suspension, two tubes were joined by a drilled plate. After completion, all welds were filed and completely finished. Tanner emphasized that the only way to form this tubing is on a hydraulic tube bender with perfectly-fitting shoes, in this case a machine used for bending conduit. Any attempts at filling with sand, etc., met with failure.

A lot of additional strength at the center is conferred by the stressed prop shaft tunnel, floorboards and front and rear firewalls. Where the installation is permanent it's riveted, and screws are used where access is needed. Wherever forming was not required, as in the firewalls and floorboards, magnesium sheet was used. All shaped parts are aluminum. Resting in holes in the floorboards, the seats are Fiberglas from Bangert Enterprises, drilled full of one inch holes and covered by Tanner. He's not entirely happy and hopes to build his own soon.

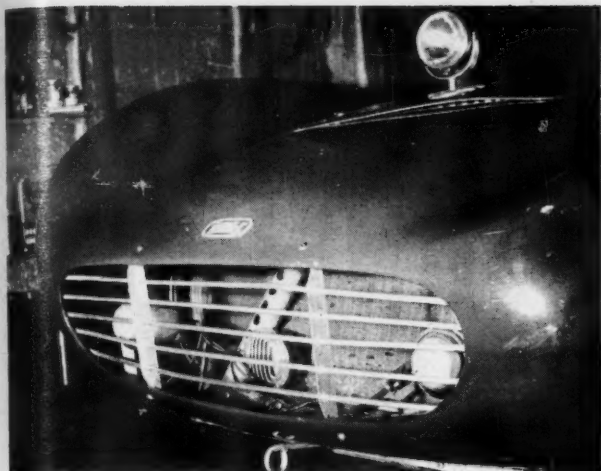
The front firewall is vertical, punctured at the center by the clutch housing. Several feet aft is a cross-tube and sheet that support the body and electrical accessories. Suspended

from this is a 1/4 inch birch board which carries an 8500 rpm Sun tach, and a clock, oil pressure and water temperature gauges purchased through an English surplus source. Road equipment is complete, by the way, right down to turn indicators. The steering wheel is Nardi, the aluminum horn button being a piston from a Chev master cylinder.

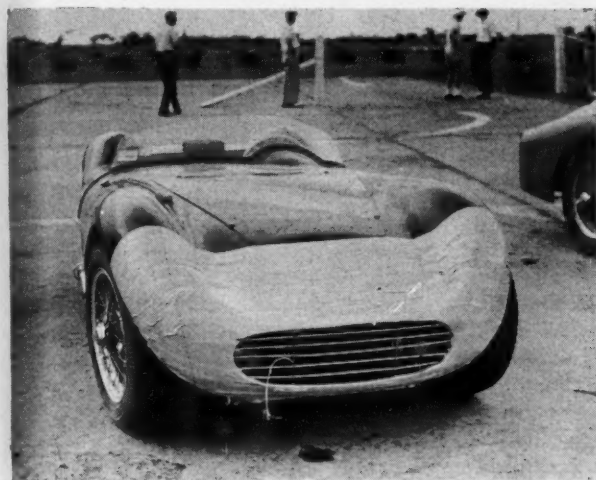
A supplementary tube at the firewall to the left of center gives added support to the pedal pivots and twin master cylinders. Shaped from drilled aluminum angle, the pedal arms actuate cylinders cantilevered into the engine compartment. In typical fashion, Tanner searched for aluminum master cylinder housings and found them in a Kaiser model. The clutch had to be disengaged by a pulling motion from the rear, and a surplus double-acting cylinder was found to do this hydraulically.

For the sake of American fittings, Ford truck cylinders are used with the Fiat brake mechanisms and backing plates. The latter are drilled for cooling, and no scoops are used. At the front are ten-inch Fiat 1100 brakes, while the rears are eight-inch Fiat 500. All drums are finned A1-Fin type, made in Italy for Fiats in general. Linings are Fren-Do.

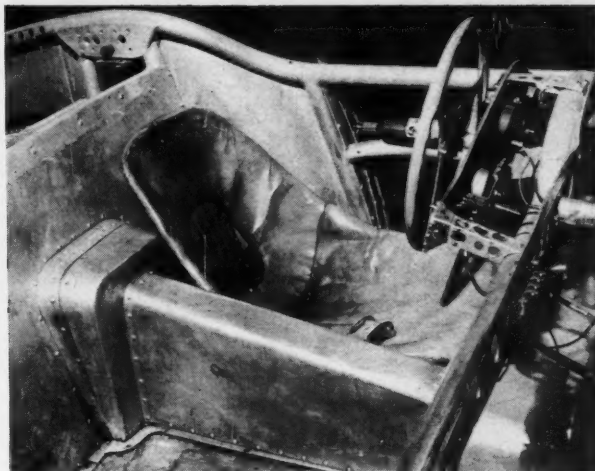
Very coarse threads are turned on the Borrani knock-off



Metalwork is clean and precise, including grille of aluminum fuel line tubing. Wiring is simplified, with quick-disconnect plug for easy body removal.



Ready for racing, Martin-T looks brutal out of proportion to its tiny size. Body lines are "paper aerodynamics", but with one screen they should be good.



Main cowl tube carries electrical accessories, supports birch dash panel on drilled struts. Bangert seat and Nardi wheel are arranged to suit Tanner's dimensions.



Brake and accelerator have hairpin return springs at pivots, are rugged yet light. Surplus cylinder for clutch flanks gearbox, has excess throw for adjusting.

hubs, which use Rudge pattern splined drive. Wheels are by the same maker with aluminum rims, which Martin has drilled out not only on the outside where it can be seen, but on the inside as well. 4.25 x 15 in size, the tires are Michelins, which themselves have been turned round and balanced. Precise pressures for racing haven't been settled on yet.

Camden's first frame set the suspension pattern, which was modified in detail by Tanner. The transverse leaf spring and twin wishbones of the Fiat were mounted with a little more caster than stock, and with one leaf removed to reduce the spring rate — front end weight being well down from the Topolino. Angled inwards, the Gabriel Adjust-O-Matic shocks are set at "firm". A full bump distance of three inches is allowed.

The steering gear and linkage is 500 Fiat throughout, though Martin is considering the use of the Heim aircraft ball joints that are found elsewhere in the car. Aluminum tubing is used for the steering column, and there's one U-joint at the gear.

Rear suspension is simple, and well-adapted to the car's

layout. The seats are so far back that there wasn't any way to locate the solid Fiat axle by trailing arms, so a parallel leading arm system was devised. Transverse location is by a Panhard rod, placed above the axle and anchored to it near the left hub.

Roll center at the rear is thus on the high side, being an inch or two above the hub line. Rear springing can then be reasonably soft, for good adhesion, without causing excessive roll in corners. The rod pivots used, ten in all, are light, simple Heim aircraft fittings. Tanner points out that his best sources for the light, compact parts he needed were the motorcycle and aircrafts industries. Each of these arms is adjustable for length.

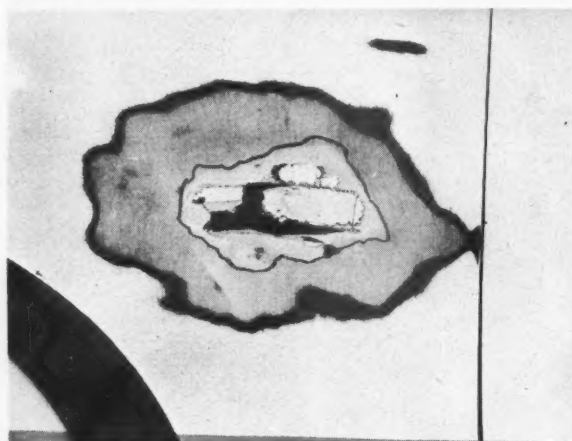
Gabriel hydraulic shocks are mounted vertically at each hub, as close to the wheel as possible, their tops being pivoted at the upper frame tube. Around the top of each shock there's a deep, drilled cup, facing down, while at the bottom shock mounting eye there's a similar but shallower cup facing up. Between these cups a modified trailer coil spring is compressed, forming a complete damper-spring unit. The exact spring stiffness is still subject to experiment, and the

(Continued on page 58)

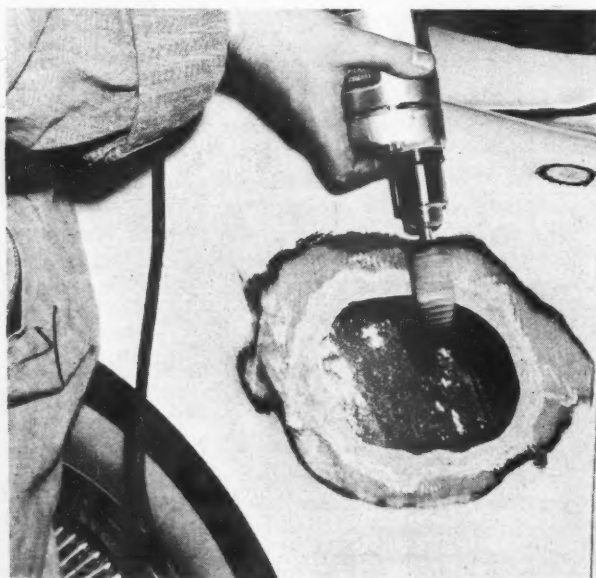
MARCH '57



1 Typical damaged area of a Fiberglas body. Quarter panels, as shown here, must be repaired from the outside. By using a good commercial wax and grease remover, clean the surface surrounding the damage.



2 Remove all paint and primer with a disk feather-edger using 3M grit 80D production paper, and expose the plastic material. If there are any other cracks around the damaged spot, they will be revealed.

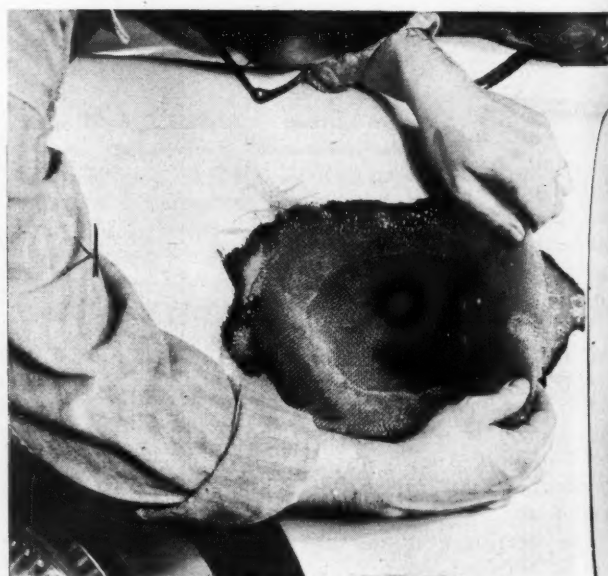


3 A cone mandrel on a slow speed grinder with 3M grit 36 cloth to rough grind away all damaged material. Bevel edge the ground out area to a 35 or 40 degree angle. This allows the patch to adhere better.

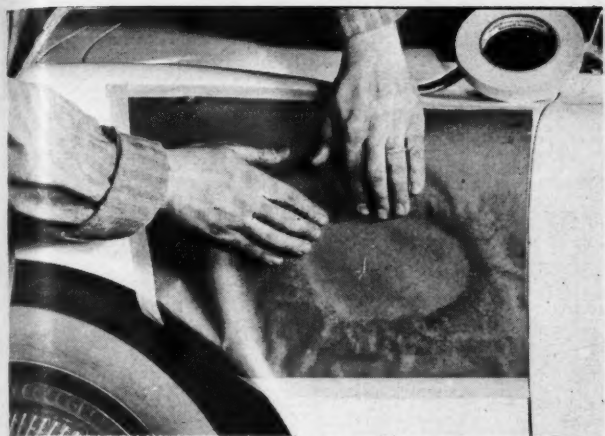
Fiberglas Repair

BY BILL CARROLL

HERE is a step-by-step procedure which will make it possible for Corvette owners to eliminate trips to the body shop. Plastic resin and fiberglas are easily obtainable in handy repair kits from Sears Roebuck, many auto supply stores and by mail from advertisers in the columns of Sports Cars Illustrated. With a little time and effort you can repair any part of a busted body, by using our pictures as a guide. Just be certain to follow the mixing instructions packed with the particular brand of plastic materials you happen to buy.



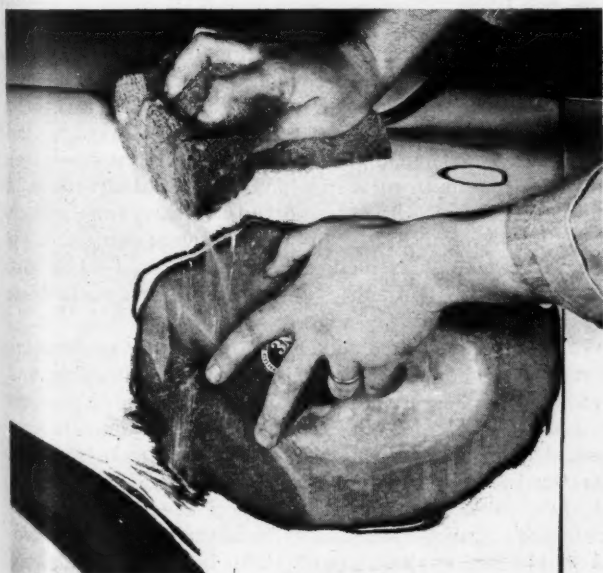
4 Cut a piece of Fiberglas cloth several inches larger larger than the hole and saturate it with resin. Apply it to the damaged section. Be sure it completely covers the opening and the newly beveled plastic.



5 Cover the repair with Kraft paper, and tape in place. Press it firmly over the entire beveled area. It's important that the center of the patch be slightly dished to form a pocket for next layers of Fiberglas.



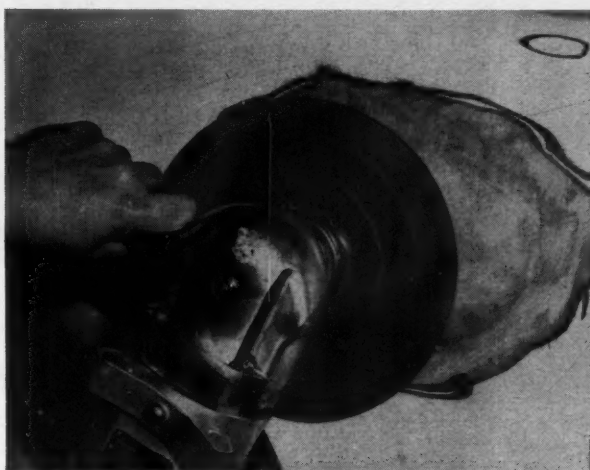
7 Before the chopped Fiberglas begins to harden, quickly tape another apron over the patch. Use a rubber squeegee to smooth the patch while keeping it well above the surrounding contour of the panel.



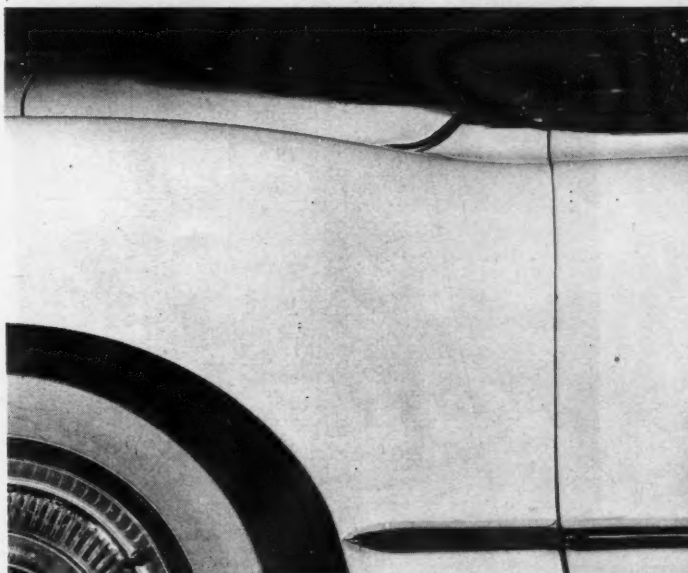
9 Use sanding block and production paper to restore final contour. Fill minor imperfections with layer of resin and filler. A tongue depressor works well to spread filler. Squeegee filler to remove air bubbles.



6 Sand the hardened patch foundation with 80D production paper. Chopped Fiberglas is then mixed thoroughly with resin. (Follow instructions in kit). Apply using rubber gloves. Build patch beyond contour.



8 Rough grind the excess material down to the basic contour using as large a disk as possible to prevent dishing. Because Fiberglas grinds rapidly, it is better to take slow cuts than to grind too far.



10 Prime surface, and carefully wet sand with 320A paper. The color coat can be sanded with grit 400A and water. After this a machine polish will create a deep, lustrous finish matching rest of car.

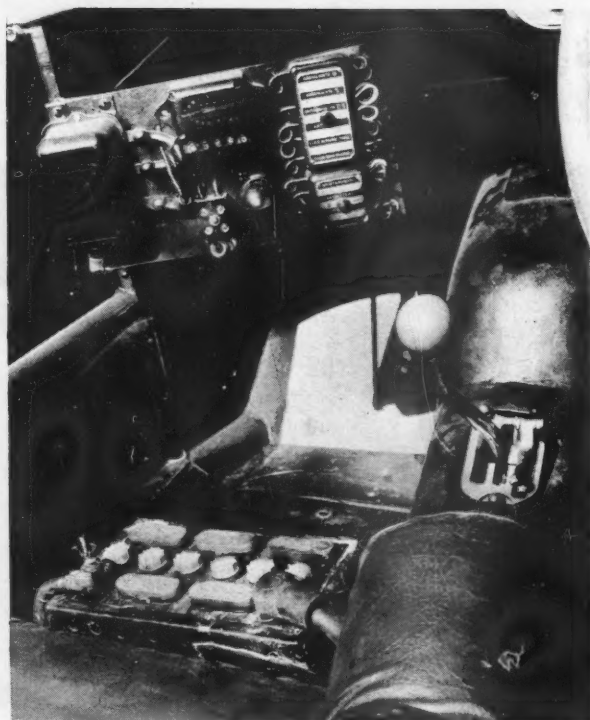


FERRARI TESTA ROSSA

track report

Accelerating hard out of Clubhouse Corner at Thompson, Dave Ash feeds throttle carefully to keep the tail where it belongs.

By DAVID ASH



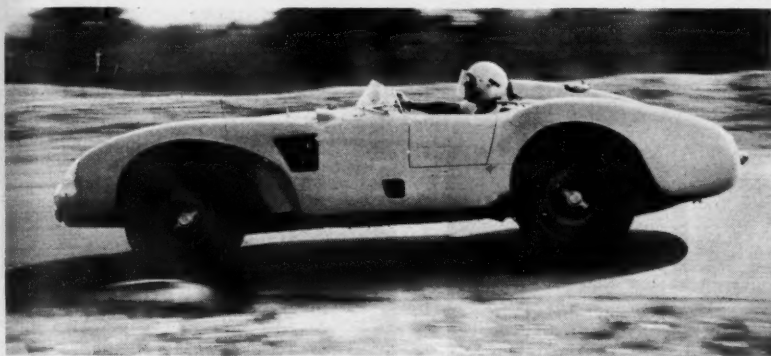
The view from the driver's seat, when checking for malfunctions. Lightweight battery and junction boxes are handy, like husky, gated gear lever.

ANTICIPATION, excitement, awe and fear are the reactions of any racer approaching a Ferrari competition car for the first time. He is skeptical of its already legendary reputation of "spare no expense", progressive, idealistic design and fantastic racing achievement. Such were our feelings on our check-out with Bob Publicker of his Le Mans Ferrari Testa Rossa at Thompson Raceway, Connecticut. A later and improved version of the new two-liter fours, this one had run at the 1956 Sarthe classic with a 2.5 liter detuned Grand Prix engine and had then gone back to Modena for a rebuild, including replacement of the GP engine with the regular Testa Rossa (Red-Head) 120 inch plant. After this thorough overhaul the Ferrari was sold to Bob.

While waiting for track chief George Weaver to show up, John Christy and Karl Ludvigsen, SCI's Managing and Tech Editors, respectively were taking all sorts of pictures and I was crawling in, out, around and under the little car. I would climb in, find myself proudly posing behind the wheel, look around quickly to see if anyone had noticed me, and then climb back out to re-inspect the beast all over again. Just standing there in the brilliant fall sun the two-liter looked like it was going like hell. Bob had asked them to paint it yellow. And they had painted it yellower than any yellow I had ever seen. As I watched this shovel-nosed machine circulating I was struck by the normality of the car's design. Engine in front. Differential in back. Drum brakes, Houdaille shocks, and what ho!, a four speed trans-



In the foreground, before the Le Mans starting flag, is the Hill car that broke its axle. Number 12 finished third, and our ex-Portago test car is at the rear.



The Testa Rossa already outhandles the Mondial in tight corners, as Ash is proving, and suspension is being improved in detail for this year. Car is also being lightened to meet new Maseratis.



Bob Publicker checks Dave out on the maximum readings and knob functions, while Bob Cressman looks on.



Checking on four-barrel after oil breather incident, Cressman looks perplexed, but all is well with ex-Grand Prix engine.

mission attached to the engine. No de Dion tube, rear-mounted gearbox or any other GP-type gadget was to be seen.

Just about then, George came up in the ambulance. We signed the releases, trundled our gear into the infield and in a moment Bob was off. The car seemed balky at the bottom end and almost stalled but as soon as he got it going the note mellowed and the wheels squeaked as he changed to second. This was Bob's first time out in several years and the first time out at Thompson. He was obviously taking it easy but his times were still quite good.

Bob was coming in. I picked up the spare cushion and went out to meet him. I patted him on the crash helmet as he stopped, took the hat from him as he removed it and helped him out.

I tried to appear as calm as possible in fixing the cushion, fastening the belt, and fitting on the helmet. The key is simple, you just push in — it is true, by the way, that the correct size nail will do as well. The starter lever, mounted as it is on the transmission tunnel in an unusual but easy to reach place, was stiff.

The engine, which had sounded beautiful, re-started quickly with an agreeable growl. I selected first, raised the revs, let out the clutch — and stalled.

Karl Ludvigsen commented dryly, "This is a little different from an MGA, Dave."

I grunted, re-started, swung down around the bank and out into the short straight leading into the oval. The tachom-

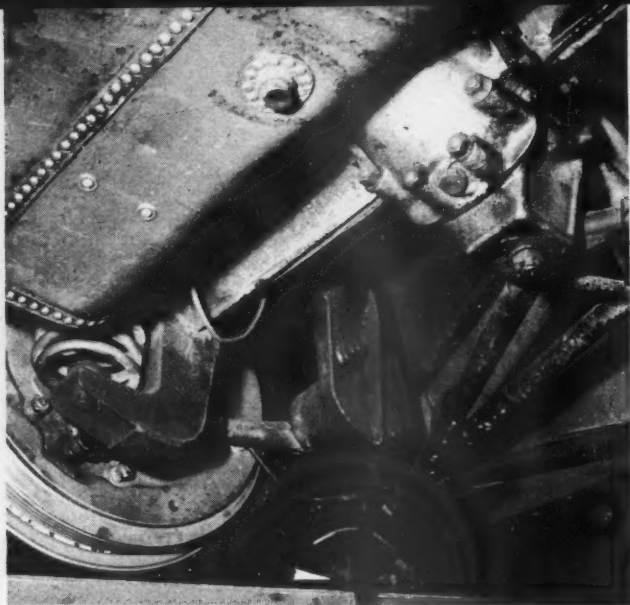
eter touched six thousand and I changed. The Ferrari put its tail-down and jumped. At the beginning of the banking I had seven thousand and backed off. The sound of this car is music to the enthusiastic ear. It starts out with a hard, thudding snarl and works its way up the scale to a buzz-saw scream of pure power. In a way it's almost similar to the symphonic twelves that came from Modena in a variety of middling sizes from 1.9 to 2.9 liters a couple of years back. It's not quite as smooth, perhaps, but that high, taut Ferrari howl is unmistakable — and wonderful to hear.

In any good sports car you get around Thompson snappily. A good TC will just break 1:30. A hot Healey Le Mans will do 1:23. The best of the Jags push it down to just under 1:22. Walter Hansgen's lap record in the D Jag is a hair-line under 1:12. The hot one and half liters, two liters and three "quart" types are strung out between 1:13 and 1:18.

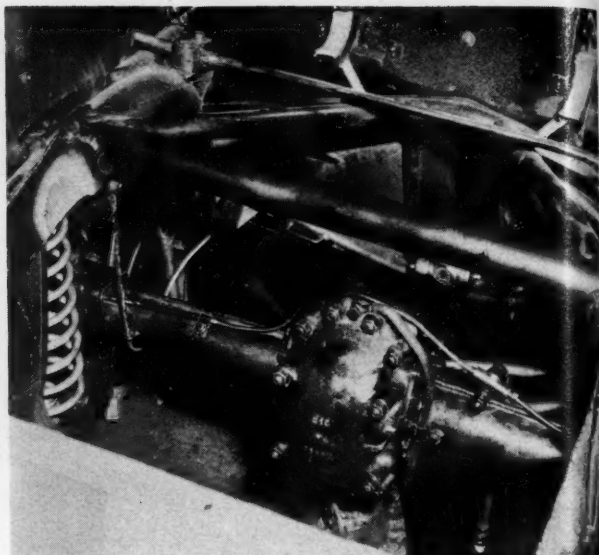
Going up that little hill for the first time I was astonished to note that it didn't seem like the car was going up hill at all. Coming over the top I applied the anchors and changed down. The gear box was light, almost slick in feel, and yet was solid and positive. I tried to toss it into the corner but it had no desire to break loose so I motored around and stepped down hard. The sensation is beyond description. You think that your hair is standing on end although you are really quite certain that it is not.

Even with the high cog the "Testa" runs out of revs in just instants in second gear. The gear box is synchromesh

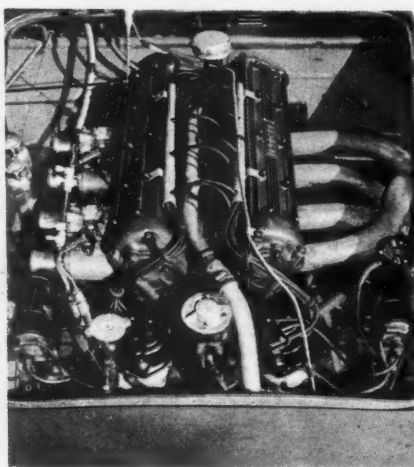
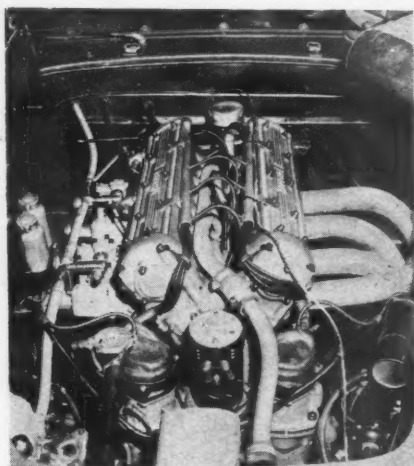
(Continued on page 60)



Big talking point on Testa Rossa is solid rear axle. Triangulated locating arm is at right, while shock and trailing radius rod are at center, near brake drum.



Axle construction is simple, rugged, has pressure vent from top. Rebound is limited by cables, while weight transfer is increased by torsion anti-roll bar at top.



At left is gouged-out 2.5 liter engine as fitted to Le Mans cars, with 42mm carbs and protective boots for distributors. Engine of standard T.R., with Scaglietti body, is at center, while old Mondial at right has vertical Marelli magnetos.

tech report

By KARL LUDVIGSEN

Technical Editor

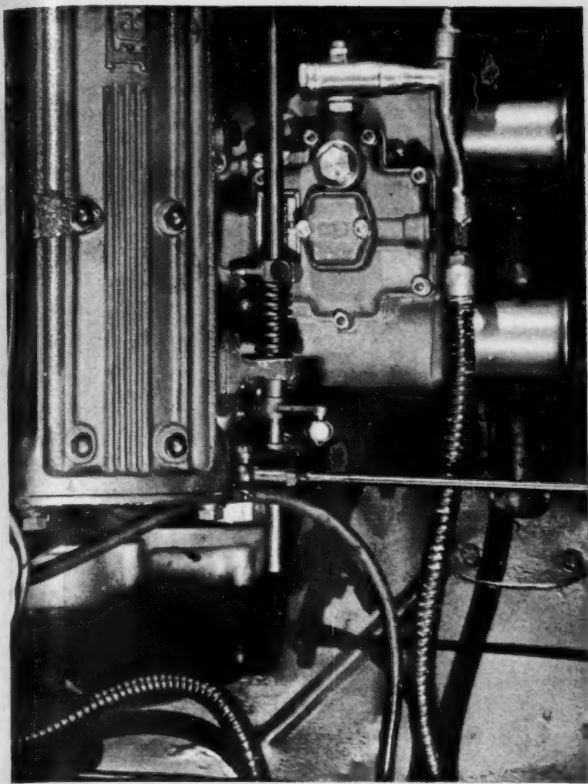
IN Class E, the new conjuring name is *Testa Rossa*. When Ferrari's latest "production" car started building prestige in sports car circles, one well-known owner-driver threw up his hands and asked, "What should we believe now? For years, designers, writers and dealers have been telling us that you can't build a good sports-racing car without De Dion tubes and rear-mounted gearboxes. So now comes this Ferrari with a solid rear axle like a Buick, and they say it's better than the Mondial. What's the story?"

As far as the competition cars from Maranello are concerned, this is a complete reversion, though touring versions like the Europa have clung to the live axle for economic reasons. For racing it's supposed to be passé, but the two-liter

Testa Rossas have been dominating their class since they appeared, and have marked up some outright wins as well. Far more than the Monza, it's fast becoming the tool of the lone hand, since it is available and it is fast. And for other reasons too.

At the close of the '55 season, it was evident that the two-year-old Mondial would need some drastic revamping to cope with both the sixes and the new fours from Maserati. Ing. Bellentani took the job on during the winter, occasionally releasing reports on the new "Red Head" engine, but when the whole car appeared at the New York show on April 28, '56, the big surprise was the unitized engine-gearbox and aforementioned axle.

With Scaglietti bodies, the standard versions were getting into circulation around Mille Miglia time, and with the new Le Mans prototype rules the car looked like a good basis for a Ferrari factory team. As a warmer-upper, a Testa Rossa team with new Superleggera Touring bodies came to the Supercortemaggiore race at Monza, which was run on June 24 with a two-liter limit. Collins and Hawthorn walked away with the event, setting up a remarkable 129.39 mph



Throttle linkage is straightforward, all hose connections wired.

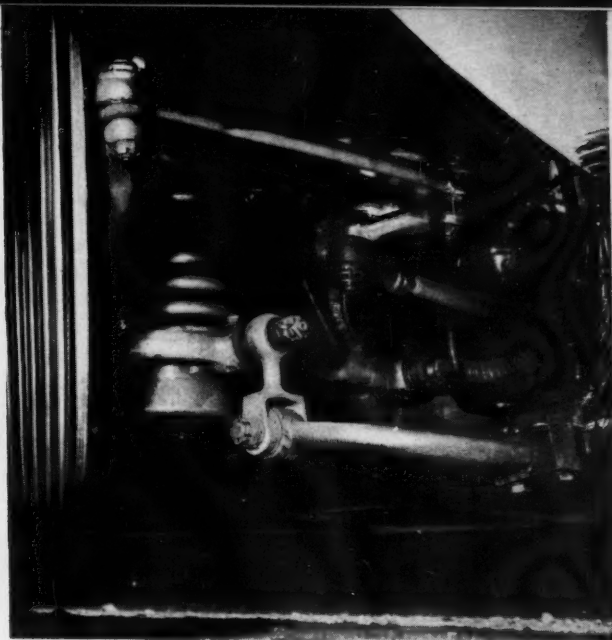
Cylindrical oil filter lies horizontally between twin access plates in sump of two-liter. Bottom of clutch housing is open for ventilation, at right of pedal pivot casting holding twin master cylinders.

absolute sports car lap record in the process.

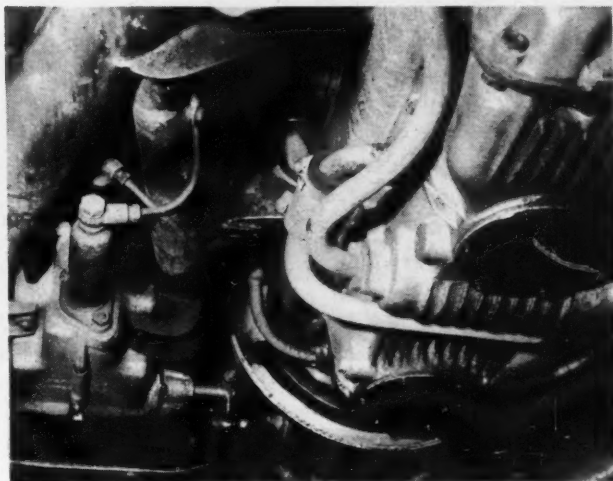
For Le Mans a 90 mm stroker crank and 42 mm Weber carbs were buttoned on, added to a bore increased by 4 mm, and one car went through to take third. Bob Publicker's car was dented early in the race, in the hands of Portago, so hadn't done so many racing miles. Meanwhile, standard Testa Rossas were chasing their bigger brothers around US courses, and rounded out the '56 season with a second, fifth and eighth in the main event at Nassau. The Mondial was never so good!

In a way, Ferrari had learned a lesson from his competition. After all, the supremely successful A6GCS Maserati did it all with a solid axle, and after trying a De Dion rig the latest small Masers are reverting to the traditional layout. Those notable small car builders, the Maserati brothers, haven't had a successful sports car since the war with anything other than a live axle.

With these as precedents, Ferrari was going against the current in bringing out the Mondial, which was one of the most complex sports cars for its size ever built. It was an early success, but didn't respond to development, the factory



Front end is current Ferrari, with coil springs and anti-roll bar linked to bottom wishbones: This Le Mans car has a full belly pan.



being more concerned with heavier metal anyway.

Fact is that the complications of sprung differentials just don't seem to be worth it when less than 190 horses have to be applied to the road. In principle it's good, since torque reactions are absorbed and unsprung weight reduced, but such arrangements usually add more than enough weight to offset the small acceleration increase provided by better traction.

With courses as smooth as they are today, a little more unsprung weight is no problem. The only exceptions to this are found in exceedingly light and clever designs like the Chapman Lotus, and in rear-engined machines like the Cooper and Porsche. The latter virtually have to have frame-mounted final drives, so they're lucky that they save enough weight by eliminating drive shafts, etc., to make up for added suspension complexities.

Just tossing out the De Dion isn't enough, of course, the proper hanging of a solid axle involving a lot of niceties. Jaguar, for example, have so much experience with conventional axles that they're having a hard time going over to

(Continued on page 59)

STILL

ROAD TEST:



Sunbeam Rapier

Rapier lines are clean, with chrome strip highlighting side undercut. Rolling all windows down leaves genuine hardtop.

FRANKLY, when we asked Rootes Motors for one of the latest Sunbeam Rapiers we didn't know what to expect.

There wasn't much to get excited about; after all it was just another British touring sedan, and none of the advance reports had gone overboard. To be sure, they'd done well in the rugged Mille Miglia, which had helped to perfect their latest dual carburetor engine, and Sunbeam *was* an outfit with a strong racing and rally background. Could a design based on a family type Hillman retain a sporting feel or an impression of distinction?

It's not evident at a glance, but the Rootes designers came through in fine fashion. However the purists may feel about the contours and two-toning (in this case white and yellow), literally everybody that laid eyes on our test Rapier commented favorably on its appearance and finish. The styling in general is not distinctive, but many details are, and the overall feeling is jaunty and compact. Under the skin the specs are straightforward, in line with post-war English dogmas. Typical are integral chassis-body, coil-and-wishbone front end and semi-elliptics at the rear. The rocker-arm four-cylinder engine is basically by the book but has such refinements as an eight-port head and square stroke/bore ratio. In spite of its overt conventionality, however, the Rapier has a very real character and a complete willingness to be driven hard.

That the Rapier is comfortable can be seen in the accompanying photos, and the equipment is clearly deluxe, so let's talk about that in detail later and approach the crucial question right now: Will it handle? The answer is an only mildly qualified yes.

After taking the car from the helpful hands of Bill Knouff at Rootes' Long Island headquarters, we wheeled it through a left and a right and at once were surprised by a definite heaviness in the steering. With 56 percent of the weight on the nose this is understandable, but at parking and town speeds a healthy amount of effort is required. It's partly justified by the steering speed, which is up to modern sports car standards and just adequate for the job in hand. Road reaction and feel are light and just right; the amount of effort required to twirl the wheel gives a consistent indication of the cornering power available at the front wheels. A bare inch of play is noticeable only in the straight-ahead position. Minor but annoying are the very fine serrations on the underside of the steering wheel. They give perfect traction to the gloved hand but can be aggravating to naked fingers.

With that weight distribution, plus a torsion anti-roll bar at the front, the Rapier understeers strongly both in theory and practice. This introduces a lag in steering response which diminishes as speed increases, until it's nearly "on" when pushing hard over back roads. It's still necessary to set up for

Photos by Don Typond

Lush design of dash is matched by fine detail trim and complete instrument marking. Radio speaker is in recess at right of steering column. Tach and speedo should be higher.



While front suspension flexes on hard left, rear axle remains flat and square to road. Traction was high.



Through fast right bend on flat road, lean of Rapier doesn't affect control. Feel from inside was good.



At 45-50 mph, Sunbeam can be slid through downhill left. Shot at far left was made from inside at same point.

the corner a moment before it's reached, however, the Rapier not being one of those cars in which you can make up your mind after you're in the corner. As inferred above, the steering gets lighter as you go faster, until you can easily toss the car from one bend to the next. The tail end can be broken loose, by a sharp movement of wheel or brake, to induce a momentary non-power drift angle. During such a stunt the Rapier feels flat and steady from the pilot's position (in spite of the pictures), and there's never any doubt about its readiness to go where you point it.

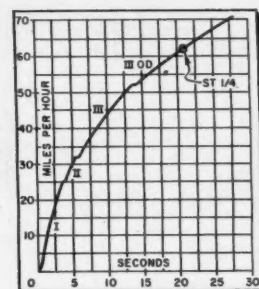
Once under way, then, the Rapier inspires real confidence in its controllability, as long as you keep a watchful eye ahead. Up to the medium speed ranges there's surprisingly little tire noise, and lateral traction on bumpy surfaces is good for a conventionally-suspended car. If by chance you don't anticipate an awkward situation, there's salvation in the powerful, consistent brakes. The drums are a modest nine inches in size, but those in front are heavily finned for both stiffness and heat dissipation, and when using them hard on the open road there's no fade worth mentioning.

The mere fact that we were able to judge the handling at high speeds must indicate that the Rapier could reach them, and indeed the performance is up to sports car standards for a 1400 cc machine. It's not frantic but compares down the line with an early-series MG. A big help is the wide selection

of gearbox ratios for all occasions, produced by the regular Rootes transmission plus a Laycock overdrive as standard equipment.

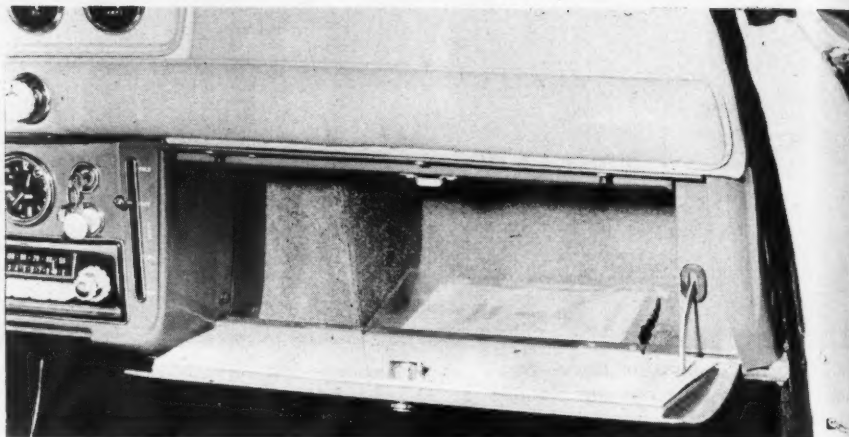
Out of long habit, our natural first approach to the car was to use all four gears in the box when moving away from a standing start. Very shortly we were getting bitter about this, finding all kinds of trouble making a smooth first-to-second shift. When reading through the thorough owner's manual later we were informed that first gear is for emergencies only and should not be used during all normal driving. This simple change in outlook made all the difference, the Rapier then having a synchromesh "first" and good ratio steps. We did use the emergency gear for acceleration testing, finding that the time taken to shift was the same or slightly less than that lost by an initial hesitation off the line in second.

Keeping in mind the Rootes column shift pattern, which is so inverted that low gear is *down* and forward, the lever is spring-loaded *up* into the third-fourth gate. A shift from second to third is just a matter of pushing the lever up, and then pushing it down again for fourth. The synchromesh is good and catches all the upshifts, but it can easily be beaten by a slovenly downshift. Reverse is way down and reachable only by pulling out the shift lever knob—not so hot for gymkhanas.



Engine compartment holds many goodies, arranged for quick access. Twin Zeniths draw clean air from balance chamber, are shielded from exhausts by sheeting. Built-in heater fits in firewall at rear.

Rapier glove compartment is mammoth, devours owner's manual. Door can be used as shelf, can be removed entirely to allow quick access for rallying.



Intermediate gear sets have a muted whine, second being too close to first for comfort, as mentioned above. Once in third, you have the option of third OD or fourth direct, which in this case is a choice worth considering. Overdrive third is a good top gear in town, with a limit of about 70 mph, and it's also useful as a lower-than-top for winding roads. In theory it would be a good step between third and fourth, but with the dash-mounted toggle switch, accessible though it may be, it's hard to put into practice. The exact sequence depends on the circumstances and the individual driver, who has five ratios to play with plus an emergency low.

Fourth OD is excellent as a cruising gear, and will carry the Rapier along without a bit of fuss at seventy. With a good run it'll go slightly faster in overdrive than in direct top, since it's over peak in the latter gear and way under peak in OD. There's no correctly geared top, as such. Shifting of the overdrive was always instant and solid, the Rapier having no interlinking with the throttle. The hydraulically-operated clutch disengaged easily and came in without chatter; it slipped slightly near the end of the acceleration tests.

Slight drive train faults aren't noticed anyway, thanks to the wide-range pulling power of the Sunbeam engine. The twin W.I.P. Zeniths are without serious flat spots, and pass enough air for usable power up to 5800 rpm. A typical rocker-

box buzz chimes in around 3500 rpm, but in all important respects the engine is very smooth. The exhaust note is a sharp, pleasant purr, like the quiet phase of a TR2's sound, and doesn't annoy the occupants at all. At speed and through the gears, the Rapier has plenty of pep, but the carb venturi size required to produce this has sacrificed low-speed flexibility to an unusual degree for a English car.

It starts at once, with use of the choke, and idles smoothly at 700 rpm. Until it's warm, though, and after a hard run, the throttle response from idle is very rough and hesitant. Even when running temperature is reached the fault remains, though diminished, and right up to the medium rev range you can't be sure what you'll get when you tromp on it for a downshift. When you're really moving, near the machine's limits, the tach needle jumps willingly and shifts pop right through.

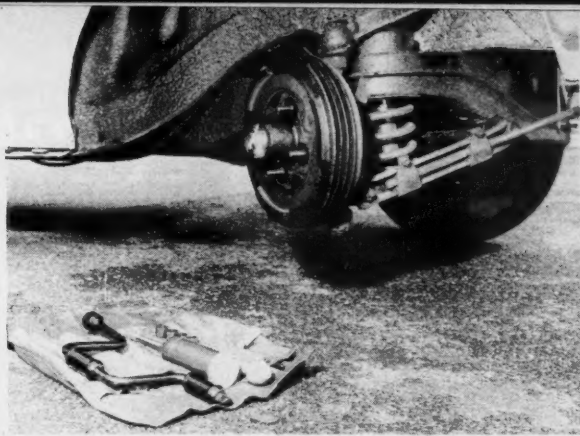
Instrumentation, of course, is excellent. Anticipating a rally and enthusiast market for the car, Sunbeam equipped it with a readable, well-lit and well-graduated set of dials, including an ammeter and trip recorder. The speedometer and tach are a little low for quick reading. Convenient at the center of the dash are the overdrive and two-speed wiper switches, which are recessed into the shallow crash padding.

(Continued on page 63)

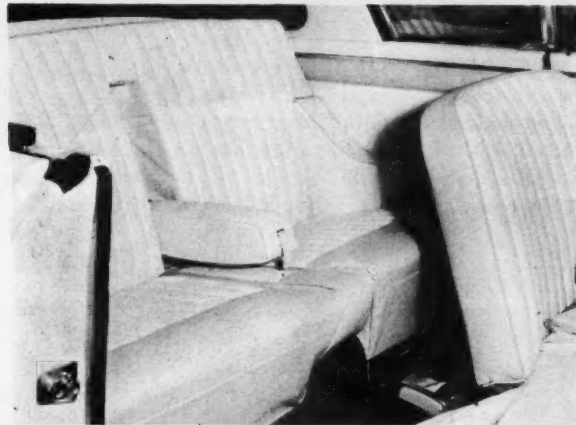


Ample trunk room is easy to get at. Trim is modest, and spare hides jack and tool kit. Below opening are positive latch and quick-open gas tank cap.

Upholstery trimming equals excellent finish of rest of Rapier. Front seat folds flat for entry, and central armrest and ashtray give luxury touch to rear seat.



Front brakes are deeply finned for cooling and stiffness. Thorough undercoating cuts road noise, gives solid feel. Anti-roll bar joins lower arms.



SUNBEAM RAPIER R67 ENGINE PERFORMANCE

TOP SPEED:

	4th	4th OD
Two-way average	81.5	84.8
Fastest one-way run	81.8	86.5

ACCELERATION:

From zero to	seconds
30 mph	5.1
40 mph	8.6
50 mph	12.7
60 mph	19.0
70 mph	27.1
Standing 1/4 mile	21.0
Speed at end of quarter	63 mph

SPEED RANGES IN GEARS:

I	zero to 25 mph
II	zero to 32 mph
III	10 to 52 mph
III OD	14 to 70 mph
IV	17 to top
IV OD	21 to top

SPEEDOMETER CORRECTION:

Indicated	Actual
30	28
40	37
50	46
60	55
70	65
80	74

FUEL CONSUMPTION:

Hard driving	20 mpg
Average driving (under 60 mph)	26 mpg

BRAKING EFFICIENCY:

(10 successive emergency stops from 60 mph, just short of locking wheels)	
1st stop	70
2nd stop	70
3rd stop	70
4th stop	70
5th stop	70
6th stop	67
7th stop	70
8th stop	66
9th stop	63
10th stop	63

SPECIFICATIONS

POWER UNIT:

Type	In-line four.
Valve Arrangement	Overhead, pushrods.
Bore & Stroke (Engl. & Met.)	3 x 3 ins; 76.2 x 76.2 mm
Stroke/Bore Ratio	1/1
Displacement (Engl. & Met.)	85 cu. ins; 1390 cc
Compression Ratio	8.0/1
Carburetion by	two Zenith 36 W.I.P.
Max. bhp @ rpm	67 at 5400
Max. Torque, lb./ft. at rpm	74 at 3000
Idle speed	700 rpm

DRIVE TRAIN:

Transmission ratios	Rev	4.04
	I	3.19
	II	2.47
	III	1.49
	IV	1

Final drive ratio (test car) 5.22; 0.76 overdrive

Other available final drive ratio... none listed

Axle torque taken by... rear leaf springs

CHASSIS:

Wheelbase	96.0 ins.
Front Tread	49.0 ins.
Rear Tread	48.5 ins.
Suspension, front	Coil and unequal wishbone
Suspension, rear	Semi-elliptic leaf
Shock absorbers	Girling telescopic
Steering type	Burman worm and nut
Steering wheel turns L to L	2 3/4
Turning diameter	34 ft.
Brake type	Lockheed hydraulic, 2 LS front
Brake lining area	121 sq. ins.
Tire size	5.60 x 15

GENERAL:

Length	160.5 ins.
Width	60.75 ins.
Height	58.0 ins.
Weight, test car	2387 lbs.
Weight distribution, F/R	55.2/44.6
Weight distribution, F/R with driver	56/44
Fuel capacity	12 U.S. gallons

RATING FACTORS:

Bhp per cu. in.	0.79
Bhp per sq. in. piston area	2.37
Torque (lb.-ft.) per cu. in.	0.87
Pounds per bhp, test car	35.5
Piston speed @ 60 mph	1610 fpm (overdrive)
Piston speed @ max bhp	2700 fpm
Brake lining area per ton (test car)	102 sq. ins.

competition report:



Palm Springs

Murphy roars past Hill on straights, but in turns the large Buick-Kurtis was no match for the agile 3.5 Ferrari.



Phil Hill leans his 3.5 Ferrari into a close bend with determination. He and Shelby ran fender-tip formation until the 4.9 Ferrari decided to part company.

JIM MOURNING

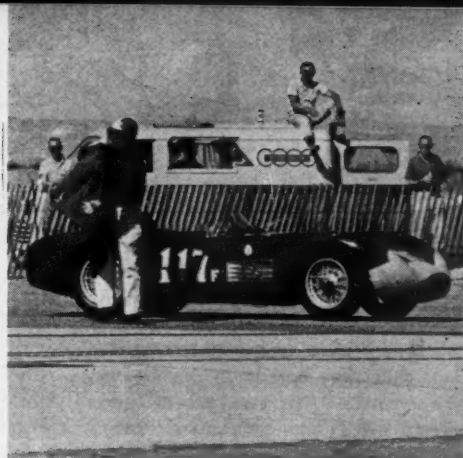
WHEN the Los Angeles region of the SCCA announced a national sanction for their Palm Springs affair, decibel ratings at sports car spas soared. It looked like a golden opportunity to see if the drivers who had been taking home the pottery in recent months were legitimate hot-shots or if they walked over the competition only when there really wasn't any. When conversation lagged, it was always revived by the perennial East-versus-West argument.

Unfortunately, the results were about as inconclusive as the conversations had been. But nobody seemed to notice. The week-end featured the best racing since Tony Parravano was bounced for professional leanings and supplied enough fresh argument material to last for months.

In the big bore feature, Carroll Shelby spotted Phil Hill something in maneuverability. Hill gave Shelby the edge in cubic inches and the pair spent 35 laps in close, unfriendly proximity. Hill managed to keep his 3.5 Ferrari on the tail



An AC-Bristol, piloted by Bob Oker, squeezes through a tight turn challenged by Forbes-Robinson in an A-H. Bristol took the flag.



Chick Leson parked Maserati to put out fire of burning dust cover.

of Shelby's 4.9 and even managed to slip momentarily into the lead on the sharper corners. But that was about all. For the most part, he waited patiently for Shelby to goof. When he didn't, Hill settled for second money.

In third spot was the D-Jaguar driven by Harold Erb, who appeared to be running a solo event. He was never within shouting distance of the leaders and was never pushed by the fourth place car.

The back-yard bomb contingent was figured to be a big factor in this event, but both of its outstanding representatives came unglued before the final flag fell. During Saturday's qualifying races, Bill Murphy, who has garnered enough trophies in recent months to open his own shop, had finished second behind Shelby after Hill had tried everything but submarining to get around the hulking Buick-Kurtis. Apparently, the effort had been too much. After trying to match the imported iron through the turns for a few laps on Sunday, Murphy retired with his brakes reduced to a fond memory.

Max Balchowsky and the recently acquired, Buick-powered Outhauser Special (formerly the Morgensen Special and usually driven by Eric Hauser), fared better, but not much. During the early dicing, he was running an easy fourth, just seconds behind the leaders. Then a leaking manifold gasket gave up the struggle and so did Balchowsky.

Photos by Rolofson

The only home-grown product to get even a look-in was the Hagemann Special driven by John Barneson, who finished fourth, a full lap behind Shelby and Hill. Jack McAfee finished an unimpressive fifth in John Edgar's 3.5 Ferrari.

If a single high spot had to be selected for the week-end, it would probably be the battle for modified cars under 1500 cc. In a field that contained top names from both coasts, the stars were Bob Drake, one of the West's most underrated drivers, and Joe Lubin's Cooper-Climax. Pete Lovely, in Edgar's Le Mans winning Porsche, turned in his usual competent job and fought Drake to a standstill during the early laps. It wasn't enough.

After spotting Lovely nearly half a lap when minor difficulties forced him into the pits, Drake came back and gave a demonstration in cornering techniques that brought spontaneous cheers from the spectators and nearly ecstatic press notices the following day. Returning in fifth position, Drake gained 3-6 seconds a lap, picked off the front runners one by one and took the checkered flag with four seconds to spare. He averaged 76 mph, just two miles an hour slower than Shelby in the 4.9 Ferrari.

In the big car event, Drake finished sixth over-all and first in class behind the wheel of an Aston Martin. This may provide a clue to his sensational performance. During the

(Continued on page 63)



Bob Drake in a Cooper-Climax seems to be loafing through the fourth race. Closest opponent was P. Lovely in Porsche 550RS.

MARCH '57

Parravano

(Continued from page 13)

the pair retired came out; the fact that Shelby had been alone in the later hours did not. To Parravano this implied just one thing: Shelby and secretary were trying to cover up the fact that they had been out living it up together. With two proud men involved, mediation attempts never got off the ground. By the time things were straightened out, Shelby had made his driving commitments elsewhere.

Names, reputation or excuses make little impression on Parravano. He tangled with the Mercedes wonder team during the 1955 season in Europe, and came out on top. Anyone who has seen the Stuttgart team in action is familiar with their habit of blocking off the end of their pit with a mechanic holding a tire when it was time for a car to come in. During one race, Parravano's pit adjoined that of Mercedes.

As the race progressed, the mechanic-tire edged further and further into Parravano territory. Tony took it as long as he felt was necessary, then he bounced both tire and mechanic. Hard stares were exchanged between the adjoining pits, but the Mercedes crew later apologized for their infringement.

It's not that Parravano is a fire-breathing ogre, it's just that incidents like these tend to remain conversational fare while the other side of his personality is forgotten. He does care about the people he's associated with, in spite of what critics might say (he's the type of person who is well-liked by those who don't hate his guts). A case in point is the time when the aforementioned Shelby went amok going into a turn at one of the Palm Springs affairs, and wrote off a new Parravano 4.9 Ferrari in the process.

Excited mechanics rushed to their boss with takes of mangled metalwork and broken frame members. "The hell with the car, I can always get another one," Parravano snapped. "I want to know if Shelby is hurt."

Even in his pleasant moods, Parravano is apt to be blunt to the point of rudeness. This tendency develops ulcers in the self-appointed public relations men who surround him. But any suggestion that he be more temperate, particularly in the presence of the press, is brushed aside. "Sometimes I'm a heel, sometimes I'm not," he asserts. "All I ask is that they tell the truth about me."

He can be extremely persuasive, particularly during his non-heel periods, and has the ability to build dream

castles before the eyes of lesser men. And once the castles are built, he wants action, not agreement from those around him. He can't tolerate "yes men," and is openly contemptuous of them. But like many executives, he does not appreciate the word "no" in the vocabularies of his associates. All he wants is top competence, unquestioned obedience, and immediate response.

He gets it, and perhaps it's well that he does. Everything about his own life seems to range from melodramatic confusion to the brink of chaos. Important clients are left waiting in his plush construction office while he tinkers with a temperamental Maserati. And cars that need attention wait while he chats with friends or clients. At one of the Torrey Pines six-hour races, part of his stable was left on the outside looking in when they didn't beat the deadline to the gate. One that did make it had to be inspected while sitting on the starting grid. This was a little too much for Pete Lovely, the Porsche-Cooper pilot who had agreed to drive for Parravano. He stalked out and scurried back to Los Angeles to get his own mount for the next day's racing.

He has never driven for Parravano since.

Why didn't Parravano's crew take care of the cars and let him devote his time to the other kinds of irons he has in the fire? It's just that the man insists on personally supervising the preparation of each car. Frequently he takes an active hand, and this penchant for getting on intimate terms with his engines has caused him difficulty on more than one occasion. Following Jack McAfee's '54 win at Golden Gate, Parravano hurried toward the winner's circle to congratulate his driver. He didn't get within shouting distance. Crowd Control personnel refused to believe that the grease-smeared little guy with a pocketful of wrenches had any business near the expensive Italian machinery.

The Man With The Golden Screwdriver — that's the title this love for taking a hand in tuning his cars has earned him. It has also made him the object of much light commentary, including the accusation that he selects his gear ratios with a Ouija board.

Born of relatively poor Italian parents in 1917, Parravano came to this country in 1934 and settled in Detroit. Though in the motor capitol, he didn't have a single high speed car to tinker with. In 1943 he shifted his base of operations to Los Angeles, and took a fling at the frozen pizza dinner market with his father. Finding pizza not to his taste — at least in the frozen state — he sold out and went to work

as a general construction manager on a profit-sharing basis. Profits were good, so he started his own construction company, which has branched into the Grand Construction Corporation. Although the firm's listed financial rating is far from astronomical, those close to him swear that he's the virtual czar of Los Angeles' rapidly developing tract areas.

But people aren't content to accept this idea. Some strange and wonderful stories have popped up to account for his wealth. He was not, for example, one of Mussolini's favorite generals during World War II. According to this tale, Parravano cleaned out the State till and skipped the country after pouring Il Duce into a drunken stupor. This is sheer nonsense: the Italian treasury was too lean during the war years to make it worth raiding. Besides, the Germans had been there first. This story, however, is no stranger than the truth. Parravano really was a general — he led a 200-man guerrilla army when he was barely 17.

Another tale pictures him as a sinister and cold-hearted loan shark. He assertedly dashed around foreclosing mortgages before he was old enough to grow a mustache to twirl. The fact that records show he arrived in this country with comparatively little money has done little to dissuade the believers of this one.

But whatever people choose to believe about the source of Parravano's income, one thing can't be denied. He has enough of it to indulge his passion for high speed machinery. At last count Scuderia Parravano contained 28 cars: 13 Maseratis — including two Grand Prix models, 11 Ferraris, one Jaguar, one aluminum-bodied Mercedes 300SL, one MG and a Cadillac. It's estimated to be worth well over \$250,000. To maintain this little fleet, he stocks a \$12,000 parts inventory. The claim mentioned earlier is borne out by this.

In '51 he bought his first sports car, since known as "Parravano's Cunningham." It's a Jaguar; at least the marque is Jaguar — the rest is nearly \$20,000 worth of modifications by Parravano. For those who say that money isn't everything, this is a case in point. The car was never developed into a winner. It was, however, the start of a sports car fleet that won nearly every U. S. event it entered during the 1955 and early 1956 seasons.

This kind of racing takes real money, and as Parravano has enough of it, he's considered fair game by the fast-buck boys and the lunatic fringe. He's constantly besieged by apple polishers, highbinders, con-men, shysters and crackpots. Doing a typi-

cal month he was asked to back a fuel injection system that even the inventor hadn't been able to make work, a California-built car of radical design, and a Nevada racing circuit with a parimutuel betting setup.

Under pressures of this type, a man just naturally seems to get a little gunshy, and Parravano is no exception. His conditioned caginess has won him a reputation as a man who won't part with a dollar even when it's due, an accusation not borne out by the nation's leading credit agency. The other side of the coin shows him as a fast man with the bankroll when there's something he wants.

It has been rumored that he offered Stirling Moss more money to drive for him than did the European factories. Moss himself doesn't deny it, but just evades the issue neatly by pointing out that he was already under contract to Maserati.

As a matter of fact, no driver has ever been heard to complain of Parravano's generosity. Driver complaints have been aimed at other aspects of the Parravano character. One driver, after a very brief career with Parravano, summed up the beefs succinctly: "The guy's nuts. How can you get along with a guy like that?"

Some people can, apparently. Parravano never seems to be short of drivers. One of the reasons is his

willingness to give newcomers a chance. "In Europe, I give young drivers a chance at one of my cars to try out. first at Modena and then at Monza if they are good enough," he says. He's now giving serious thought to backing a driver training school in the Los Angeles area.

Original purpose of this latest trip was an assault on European circuits with a stable of 12 cars. But poor health intervened, and it turned into a vacation — of sorts. Parravano's idea of a vacation consists of contacting drivers, talking to factory racing representatives, and consulting with the Federation Internationale de L'Automobile. Hence the clutch of Orsiware mentioned earlier.

Why all this activity? Secrecy seems to be the order of the day, but a few facts have been uncovered that may give an indication of what's in store. Parravano has developed a legal corporation known as PARR (Parravano American Road Racing). He is dickering for property near Los Angeles. A local firm has been contracted to design a 3.5 mile circuit similar to the autodrome at Monza, featuring an Indianapolis type oval in the center. The conclusion may not be obvious, but it's not exactly obscure, either.

While road raving enthusiasts await developments, Parravano continues with "Project Lily Gilding". Asserting

that private information indicates the Mexican Road Race will be run again, he has had three Ferraris rebuilt by his four full-time mechanics. The cars are three inches lower and six inches shorter than the factory models, and will have special, all magnesium bodies by Jack Sutton, of Indy car building fame. Starting with a 4.5 liter engine, they have shortened the stroke, enlarged the bore, and wound up with a 4.9.

Contemplated drivers for the cars are Shelby, Jimmy Bryan and Umberto Maglioli, who finished one of Parravano's cars second in the big sports car race in Argentina early in 1956.

And somewhere in Europe, factory mechanics are carefully putting together a brace of V-8 powered racers for the Memorial Day classic at Indianapolis.

The key to Parravano's future activities probably lies in a statement that he has been making consistently for more than a year. "I want to help make road racing big time. I want to see professional racing on a European basis in the United States — high class, big-time events."

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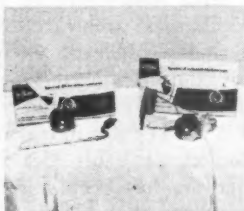
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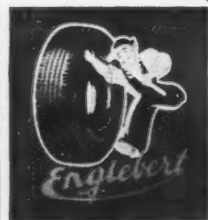
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(Continued from page 29)

That was shortly before WW I. In 1919, Martin girded his loins for small scale car production and ran up a prototype to an original specification. He was not himself a qualified designer but he had had enough practical experience to know what worked and what didn't. Translated on the drawingboard by trained intellects, his ideas crystalized into a 1½ liter sports car of very attractive appearance and a performance that was unique at that date in its capacity class.

The engine had four monoblock cylinders measuring 62½ by 100 millimeters, an L-head, a hollow crankshaft and steel pistons. A four speed gearbox with a right-hand shift was mounted halfway back along the chassis, with an open shaft connecting it to the clutch, which was in unit with the engine. A torque tube enclosed the drive to the axle and the back springs were underslung and shackled at both ends. As you would expect, this L-header was no screamer, but it evidently produced good torque within its modest rpm band. Weighing some 1665 pounds and geared at 3.75 to one in high, the car had a top speed of around 72 miles per hour, according to *The Motor*. In 1921, after putting 625 miles into a two-day road test at an average of 33 mph and about 28 miles per U. S. gallon of fuel, *The Motor* reported that "we have not yet encountered any other car . . . which can surpass this performance."

In souped-up form, the L-head engine propelled various race rigs at speeds that were sensational for their day. *Bunny*, a short wheelbase two-seater which won fame in the hands of such chauffeurs as Sammy Davis, Colonel Clive Gallop, Eddie Hall and H. Kensington Moir, raised the international Class F record for one hour to 86 mph in 1921. The following year the same redoubtable L-header made history as the first light car (defined in Europe as anything under 1500 cc) to break world records, averaging around 75 mph for durations up to 19 hours. In the Brooklands "200" of 1921, after two 16-valvers entered by the makers had cracked up and retired, an impudent L-head stuck out the distance and placed second in the 1500 cc class.

Although the second series sixteen-valver, as traced by that gifted plagiarist Gremillion, was more advanced and of greater technical interest than its Bamford and Martin contemporaries,

the reverence in which A.M. history enshrines it is based more on sentiment than solid achievement.

The fabulous *Razorblade* single seater, also fitted with the Gremillion engine, had a checkered career too. Lovingly preserved to this day by the most envied member of the Aston Martin Owners' Club, it is periodically de-mothballed and given a canter in A.M.O.C. meets on English circuits, such as Silverstone, which were corn fields in the year of its birth. Like the Grand Prix models before it, *Razorblade* failed in the task for which it was built, namely, to break the coveted hour record in international class F. At low speed the car developed a maniac wheel wobble and at almost exactly 100 mph it made a regular habit of casting its right-side front tire. It did redeem itself to some extent, however, by setting standing start records for the mile and kilometer at 72 and 66.54 mph, respectively.

In spite of the multiplicity of models produced during the Middle Ages of Aston history, that is, between the Bertelli-Renwick takeover in '27 and the 1939 shutdown enforced by the war, the A.M.s of this period had several common denominators. All of them—T-Types, Standards, Internationals, Le Mans jobs, Mark II's, Ulsters, 15/95's, 2 liters, 2 liter Speed Models, C-Types—were superbly engineered and finished, recalling Lionel Martin's boast that workmanship that was good enough for Rolls Royce would satisfy him, just. With their squat build, wide treads and characteristically business-like radiator shape, they had a challenging, four-square look that was something more than mere prettiness.

Except as a result of neglect of workshop tasks relating to road holding, steering, braking, etc., a pre-war Aston was one of the safest things on wheels to drive. A.M. gearboxes, whether separate from the engine (as on the T-Types and early Internationals) or in unit, were a delight to manipulate, and all the better in the view of the true believer for their innocence of fool-proofing synchromesh: a shift so fast it would take a Japanese juggler to "beat" it.

The worm drive featured on the separate gearbox models of the late 20's and early 30's, for instance, was purely an abomination. It wore out apace and, as it wore, developed a vengeful whine. Harry Bertelli, known always to his friends as Bert, never would or could believe that his cars weighed as much as they actually did, so he usually overgeared them; many an Aston was as fast in third as in high, except downhill.

Dry sump lubrication, which even today is only found on expensive and

exclusive competition cars, was introduced by Bertelli as a stock feature on the Internationals back in 1928, and subsequently became one of the A.M. hallmarks. The oil tank, decently concealed under a louvered steel apron, was hung between the dumbirons. Here, fully segregated from underhood heat, it received maximum air cooling, which may have helped to account for the exceptional stamina of the engines under prolonged spells of high load and revs. In day to day use, particularly in winter, on the other hand, the dry-sumpers suffered from overcooling of the oil; in the minutes following cold starts after overnight inaction, it can be surmised that the bearing and cylinder surfaces, like the hart in the hymn, panted for cooling streams. The matter was aggravated, of course, by the long lines of communication perforce traversed by these streams.

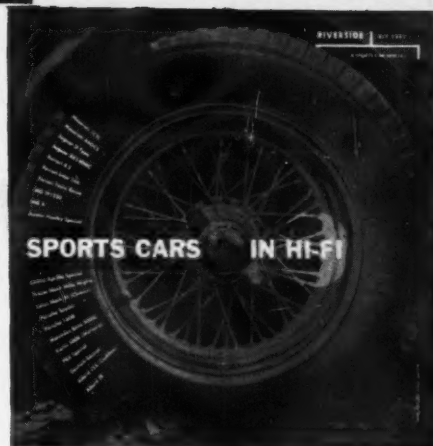
None of the prewar A.M.s aspired to anything as Sybaritic as i.f.s., and the springs they did have were of such uncompromising rigidity and so dourly damped that it would have seemed inconsequential for the designer to bother his head keeping unsprung weight down. So—he didn't. The wheels themselves, brakes and tires included, probably weighed more than those of any present-day British car, regardless of displacement. But that wasn't enough. The helmet type fenders fitted to the International, Le Mans and Ulster models were fixed directly to the brake backplates, and accordingly were included in the unsprung weight. For good measure, the parking lamps were mounted on the fenders.

When, with the inexorable march of time, Aston Martin took their first hesitant steps towards a modernized body shape, Britain's motoring literati, as well as the Feltham clientele, felt practically affronted, and said so. Recording roadtest impressions of the moderately cowed and rounded 2 liter Speed Model in 1938, *The Autocar* admitted, apropos this one's appearance, that "an element of initial shock has to be overcome". Ten years later, when the drapes were lifted off David Brown's first confection—a pushrod 2 liter with more curves and convexities than a nautch dancer—*A.M.* magazine so far forgot itself as to call it a "souped up, ultra modern, tram fronted mouth organ". The writer comforted himself however, with the reflection that "they are probably for export only for the next year or two".

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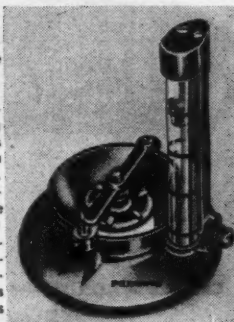
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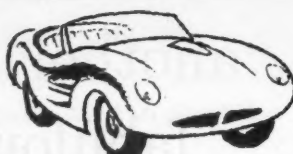
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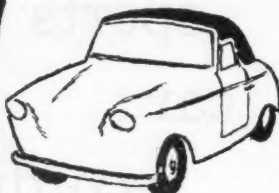
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Poor Man's Ferrari

(Continued from page 17)

A similar difficulty appeared in early development, when the top radiator hose was prone to blow off. An extension to the header tank solved it, both by increasing the coolant capacity and decreasing the length of hose necessary. The radiator has been recored by Harrison, and an easily-installed Simca water pump offers both a larger capacity and a bronze instead of an aluminum impeller.

Other accessories include the Marelli generator and starter, which are from a Fiat 500. That starter just kicks the engine over, but it's as light as can be. This whole reworked assembly has been on a couple of Detroit dynamometers in the course of construction, and the torque peak has been located at 4000 rpm. Peak power is at 6000, where 70 horses can be held consistently and a top of 74 reached. Don reports that it'll run on up to 8000 revs without strain. Not bad for 66 cubic inches on gas!

To keep tabs on the activities there's a 7000 rpm Sun tachometer, which is being sadly overworked. Also indicated are the oil and water temperatures, the oil pressure, charging rate and fuel level. For quick engine cut-off there's a relay magneto control.

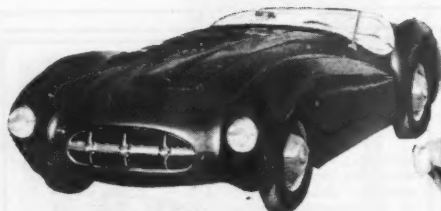
Again basically Fiat, the deep, recessed flywheel received a good reducing diet at the hands of Siata. The Volkswagen-like pressure plate went out to Ace Clutch in Detroit for new springs and spacers, and now applies a total of some 900 pounds to the eight-inch MG clutch disc. Chosen for its shock-reducing sprung hub, this has been faced with Fren-Do competition segments.

The clutch housing is another Siata-Fiat combo, and carries the actuating shaft for the roller-type throwout bearing. To the rear there's an 1100 TV four-speed gearbox, with central control by a short lever and synchro on the top three speeds. After the cam was developed and new rear end ratios selected, third gear wasn't quite right, so a more suitable third and fourth gear set from a Fiat station wagon was installed.

Siata is fully responsible for the car's light-gauge steel platform chassis, which was originally intended to carry the featherweight Crosley 750 cc engine. Wheelbase is 82.6 inches, while the treads are 45.2 inches front and 43.8 inches rear. A small-section box framework and a steel cowl support the aluminum bodywork, which came

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off the boat with full weather equipment. This is now reposing in the Black family basement, of course, but some sort of windshield was necessary. Don cooked up a good one from a sheet of lucite and some strips of Reynolds aluminum "Do-it-Yourself" storm door molding.

The transverse leaf front suspension is taken from a Fiat 500 station wagon, and was originally set up for the weight of the Crosley engine. To bring back the proper camber with the heavier Italian engine, Don shortened the top leaf slightly. Other refinements are zinc shims between the leaves, and large-capacity Jaguar-Girling telescopic shocks.

A hefty 1100 steering box is tied into the type 500 linkage, and the combination gives a rapid one and three-quarters turns from lock to lock. Unhappy about the Italian approach, Don fitted Austin A-30 tie rod ends.

Two Spicer universals bracket the open tubular drive shaft, which has splined joints at both ends and is thus very easy to remove. The live rear axle is 1100 Fiat. Its center section has been vented to prevent pressure build-up, which appears to be particularly critical with these axles. In addition to the standard 4.6 ratio, Black has some coarser Siata gears for 3.7, 3.9, 4.1 and 4.3. A good selection, though

some lower "short course" ratios might round it out.

The axle is hung Hotchkiss-fashion from two semi-elliptic leaf springs. These are a Siata concoction, being midway in size between 500 and 1100. Hillman-Girling shocks are used at the back, more for convenience than for added capacity.



Don's happy with Do-It-Self windshield.

As power went up, so did the braking requirements, and a pair of ten-inch 1400 Fiat assemblies were ordered for the front wheels. The inner wheel bearings were okay for the conversion, but Timken outer bearings had to be found with the 1400 outer diameter and an inner diameter for the type 500 spindle. The new drums are the latest in Al-Fin, with machined-on fins, while the six-inch rears have the earlier finned muffs shrunk on steel drums. There's no special air venting, though such is planned, and Fren-Do competition lining is used

all around.

Fifteen-inch aluminum alloy Borrani Record wheels hold it all up, through 3.75 inch rims. Tire size is 4.25 x 15, and 30 pounds of pressure are usually carried. A Marelli mechanical pump has been relied on to draw fuel from the six gallon tank, but it's about to be supplemented with a rear-mounted electric Autopulse.

In the original trim, fully suitable for touring, the handsome red machine weighed in at 1250 pounds. The competition, "poor man's Ferrari," version is down to a lithe 1105 pounds dry, split equally between front and rear. At this point Don Black still affirms that this is a cheap way to go racing, thanks to the very high design/cost ratio of the vast line of Fiat components.

Running largely in Michigan sprints, time trials and hillclimbs, the red Siata has raked in five firsts, two thirds and one d.n.f. It's still practical and fun for street use, but Don is a firm believer in the competition car for its own sake. To follow this up without going broke he's looking around for a good Formula III car, and when he finds it we can be sure of one thing: If it needs any changes they'll be done first and talked about only when proved.

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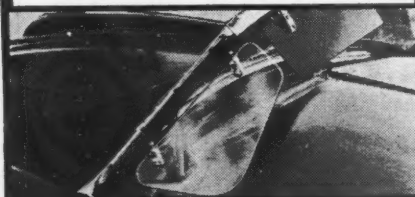
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XK 140

(Continued from page 24)

ing and power out of open back road bends.

From a standing start there is a thumping rear spring windup but commendably little wheelspin. Once in high gear, cruising speed is largely a matter of circumstances, but we found speeds between 85 and 90 miles per hour mechanically comfortable.

For the first time on a production Jaguar, the brakes appear to be consistent and fadeproof under hard, fast road use. They do not yield the highest retardation for pressure exerted, but the combination of hard linings, venting and wire wheels has ensured that they will always be there when you need them. This is uncommon on a car as fast and as heavy as this, and has taken some five years to achieve. A remaining fault is a slight tendency toward nosediving on braking.

Weight Distribution

The forward engine shift changed the Jag's weight distribution from 48/52 to 50/50, and produced a notable improvement in its already good high speed handling. The chassis characteristic is one of very strong understeer, which confers excellent stability both in a straight line and on fast corners at the expense of some low speed responsiveness. As noted by top Jag driver Charlie Wallace in SCI over a year ago, it is now much easier to set up and hold an honest drift, and the steering is fully quick enough to allow precise control. The steering action also lightens as speed increases, and all reactions and responses become rapid and predictable.

Even at high speeds there is noticeable roll when cornering, but it doesn't affect control or intrude on the driver. The unsprung weight of the live rear axle shows up on bumpy corners, where the rear end as well as the rest of the car becomes light-footed and jumpy. Control can be maintained, though, as breakaway will not occur without plenty of warning.

This same sensitivity to small bumps shows up in the ride of the 140 MC, which is fitted as standard with the same one inch front torsion bars that used to be optional in "M" form. The resulting higher suspension rate has helped to improve handling. The ride is, however, comfortable under most circumstances and free from pitching.

A sense of well-being is also derived

from the seats, which are much better than appears at a glance. Access to them is quite easy for a sports car, and the passenger can first sit down and then swing his legs into the car. The doors are well-hinged and latched, with a twist lock for the interior cord-type release. In spite of a lack of visible contouring, the seat backs provide good lateral support for the torso. Cushioning just strikes the medium between softness and firmness, and does not tire one on long trips.

The driver sits with his feet unusually high and the wheel right on his lap. Modifications to the interior together with seat and wheel adjustments have made it possible for many more people to drive the Jaguar comfortably, and leg and head room is now ample. In fact, the left foot has to choose between flopping about loose in a bottomless hole or resting gently on the clutch pedal. There is not too much left elbow room for the driver, but he can often make use of



Flap, between trunk and cockpit, in the unfolded position, yields enough room for assembled fishing rod, gear.

the door cutaway. The cockpit in general is adequate but small for a car as big as the Jaguar.

Instruments

Adjustment of the big-slim-rimmed steering wheel is made difficult by the proximity of the instrument box. The gear lever and pull-up handbrake are close at hand, but the clockwork direction signal switch is hidden in an almost inaccessible cranny at the left. Instrumentation is complete, and could hardly be better graduated and marked. In view of this, it's too bad that deep recessing in the dash has caused certain critical dial areas to be hidden from the driver's view. Minor controls and dash lighting are good, but a map-reading light is sorely missed.

Odds and ends can be stored in deep door pockets, whose flaps are heard to

open when the doors are closed. The side curtains are stowed tightly in a bag which then fits in a shelf high behind the seats and above the folded top. Erection of this top is a clumsy process that can be refined with practice, and is almost worth the trouble. Fitting between the top and the heavy plexglas side curtains has been much improved and effectively withstands wind and rain. The same can't be said of the area above the windshield, which leaked freely on the test car in spite of three clamps.

As car speed rose above 100 miles per hour, the right side curtain moved and flipped open the right hand top latch. Simultaneously, three side snaps popped open and added to the sound and fury. While these conditions were peculiar to the SCI test car, they seem to be typical of what to expect. The same snaps were inadequate on the tonneau cover, and the owner would do well to install "Dot" fasteners all around. Visibility is much enhanced by raising the rear window flap, but without this the view to the rear is a very short and narrow one.

Body

The trunk itself is long and shallow, and the length can be increased even more by folding open a flap between the trunk and cockpit. With this open and the seat pushed forward, a bundle of skis could be carried inside the car on the right, when the top is up.

Under the long, alligator-type hood the C-type head is an unalloyed joy with its red and polished aluminum finish, and the enamelled exhaust manifolds recall the classic era. The forward shift has made it a tight fit, however, and many electrical and carburetion adjustments are hard to reach from above. The plugs couldn't be easier to service, and the brake master cylinder reservoir is handy.

This latest revision of a time-tested machine is notably improved in the handling and braking departments, and this together with its smooth and surging power make it a delight to drive at high speeds over long distances on fast, winding roads. If used in town it can be difficult to the point of being tiring, but this is not its purpose in life. The steering and the top provide annoyances at present, but these can be dealt with and are just part of getting so much car for such a reasonable price. This is, after all, the crux of Jaguar success, and the XK 140 series has ably enhanced the reputation of its forebears.

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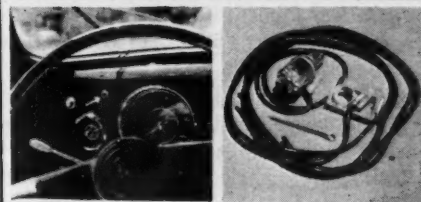
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MARCH '57

Featherweight

(Continued from page 37)

Gabriels are now at the normal setting.

A vented Moon fuel tank of five gallon capacity is hung low behind the rear axle and to the right. Gas is sent forward by a Bendix electric pump, behind the right hand seat, and the fuel line is aluminum tubing. Above the tank, the spare wheel and tire rest on two drilled angles, and are held down by a strap at the front and a wingnut-retained pad at the rear.

Neatly bracketed inside the frame tubes at the front, the radiator was built up to fit the chassis. As usual, a cardboard mockup came first, and a Jeep core was found that came close. A brass header tank was fabricated to suit, and a five-pound pressure cap fitted. A smaller-than-standard pump circulates roughly six quarts of coolant, which now run at about 145 degrees F. Just forward of the firewall on the left, the lightweight aircraft battery is anchored to the floor pan extension and grounded to the upper frame tube. All mechanical components — engine, gearbox, axle, suspensions — are above the full aluminum belly pan, which gives a four inch ground clearance.

Wrapped tightly and cleanly around this structure is a one-piece aluminum shell which totals 45 pounds in weight. Tanner spent a number of weeks straight on this job, and if you even hint at another such task he'll throw up his hands in despair. The whole body was hammered out of .040 inch 5052-O aluminum, which was attacked a piece at time. When roughly shaped, the pieces were tacked down to a light framework over the partially-completed chassis.

Larger sections were then acetylene-welded together and finished further. After it had become one piece and its shape was sufficiently defined, the body went to Wayne Fox of Saginaw, who gave it a final finish, using a moderate amount of resin filler. He also applied the red paint job.

Unique body features include the featherweight grille, made from the same aluminum tubing as the fuel line! Indian motorcycle headlights are pivot-mounted on posts, which have radio-type jacks at their bottom ends and plug into holes atop the fenders. When not in use they stow inside the cockpit.

Martin couldn't find a suitable 12-volt headlight bulb until he hit on the obvious choice of a unit from a 1942 American-La France fire engine. To avoid the extra weight of duplicate wiring and light assemblies for direc-

tional signals, he installed a small relay for each side of the car which selects the right circuit at the right time. A six-volt motorcycle horn sounds off fine on twelve volts.

Many tire-kickers have remarked on the Martin-T's nameplate, which has a very professional look. Tanner confessed that it was done by making up an exact ink drawing of the design and sending it to a printer's photo engraver. They etched a zinc plate according to the lettering, and Tanner painted in the etched area. Result: a handsome raised plate at very little cost. They can also be executed in copper.

While all this superb craftsmanship was being expended, young Jerry Braun was lending a helping hand with engine assembly. Tony Pompeo of New Haven was also instrumental in advising and supplying information and equipment. As a result there's a large proportion of Italian bits in the engine, and Tanner admits that he's still far from a perfect state of tune. Fortunately he has the courage to try new solutions and experiment with clearances, ram effects, etc., so the past winter should have been a fruitful one.

The block chosen was the familiar cast-iron CIBA Crosley, with the wedge-shaped "Turbulator" in the combustion chamber. To bring displacement right up to the class H limit a forged steel Nardi crank with a 2 mm stroker was chosen; it also stiffens the bottom end. Since the stock flat-topped Crosley pistons are fitted, the combustion chambers had to be lightly machined to clear the extra millimeter upward throw. This change, plus the use of a paper gasket between block and crankcase, brought the compression ratio to 10.25/1.

To get the heavier bearing support webs, the latest crankcase was used. As originated by Braje and picked up by the factory, the three center mains (there are five) have U-section steel straps to back up the aluminum caps. Bearings throughout are Federal-Mogul, and both mains and big-ends are being tried at .004 inch clearance.

Increased capacity and stiffness are lent by a cast Braje sump, in which a longitudinal baffle has been fitted to minimize oil loss on turns. The pickup has also been lowered to conform to the new sump depth. To make sure the Castrol R keeps circulating, metal was added to the face of the oil pump case and longer pump gears installed.

The cover was then lapped to fit both gears and case. A spacer under the relief spring keeps pressure up. Since oil is invariably changed between events, no filter is used, and the connections are used for lines to an ex-refrigerator-condenser oil cooler mounted behind the radiator.

Since practically the whole car is

light alloy, Tanner saw no reason to stop at the rods. They're Italian-made of magnesium, and in spite of a thicker center section are reputed to be one-third the weight of the standard part. No bushing is fitted for the stock wrist pin, which is a heavy press-fit in the small end. Aluminum buttons keep it centered in the piston. The latter has a short skirt and carries two cast-iron compression rings and one oil ring — all by Perfect Circle.

Up above these goodies there's the bevel-driven stick that makes it all worth while. The cam for the Martin-T was whittled out by the Litterio Brothers in old Italy, and its contours usefully raise the working rev range without killing bottom-end power. Lift is very little, if any, greater than stock, but overlap is 42 degrees and intake duration a healthy 267 degrees.

Italian followers were supplied with the cam and given a try, but they dished out badly and have been replaced by stock tappets. Valve springs are the stiffest stock parts, which, like the Roto-caps used on all eight valves, are available from Thompson Products, of Cleveland 17, Ohio. Additional shims are also inserted under all springs.

Valves themselves are stock, and use the standard seat angles. The intake ports were fully polished but not enlarged to any degree.

Martin welded the intake manifold up of aluminum tubing and flat stock, giving it a curved balance pipe of moderate diameter. First carburetor trials were carried out with 1 1/8 inch Amals, controlled by a complete motorcycle cable linkage, including choke valves. A single SU float bowl was suspended between the flared ram tubes, and fed the Amal bodies directly.

The little Crosley was found to be overcarbureted with the 1 1/8 inch bores, so one inch Amals were substituted. At the same time the chokes and controls were done away with, and the bracket for the float bowl redesigned for stiffness. A No. 180 main jet is fitted, experimentation being carried out by changing the metering needle.

Welded up from steel tailpipe sections, the exhaust manifold is simple in layout. A true tuned scavenge-type system is in the offing. At the point of emergence from the body the piping becomes, of course, aluminum.

Ignition is by Mallory Magspark, designed specifically for the Crosley and tested at their Detroit plant. Mallory, by the way, has always extended a helpful hand to those who take the trouble to call on them with a sincere purpose in mind. This installation has mechanical spark advance only, and fires KLG FE50 plugs. To suit the 12-volt system a Fiat 500 starter was used. The 12 amp Crosley generator had to be rebuilt, so

in the process it was converted to 12 volts.

As it stood at the end of 1956, shortly after the completion of construction, Martin estimated a moderate 45 horses for the power package. The power peak is above 7000 rpm, and he takes it to 8000 when in a hurry. For touring use, to which the machine is often put, it's run to about 5000 in the gears and cruises comfortably at 6500 rpm.

A shadow of its former self, a 500 Fiat flywheel was cut to four pounds and bolted to the Crosley crank. Cast by Nardi, an adapter plate intervenes between Crosley crankcase and Fiat bell housing. The clutch is also Fiat 500, with Fren-Do competition lining and stiffer Nardi springs.

The compact rear-control gearbox was built up from several broken Fiat and Simca units, the healthy parts adding up just right. The top three gears are synchronized, with reasonably good ratios, while low can easily be selected (by tugging with both hands). Weight of the box is 35 pounds, while the engine scales at 150 pounds. A drilled and shaped aluminum angle is bolted the length of each side of the crankcase, and each rests on a former Crosley rear mount.

Around the gearbox extension, also, there's a rubber muff, which is fixed to the stressed floor pan by a drilled strap. Distances are so related that the bulk of the package weight falls on the front two mounts, the rear mount exerting a steadying effect and supporting only 15 pounds.

Once Fiat, the drive shaft is now a 2½ inch diameter tube of .125 inch wall aluminum. Steel collars are riveted on both ends to accommodate the Fiat fabric universal joints. Tanner has two ratios for the spiral-bevel Fiat 500 rear end, one being 35/6 and the other 39/8. These correspond to 5.84 and 4.87.

As can be seen in the photos and center spread, the detail workmanship in the Martin-T verges on the fantastic. The car is a veritable jewel, a worthy prototype for one of the great racing factories. There's no doubt that the experimentation with light alloy has paid off, since the car scales 720 pounds dry. This has introduced some unsprung weight complications at the rear, but attention to shocks and springs should minimize them for the '57 season. A trailer's being built, and a full competition year is planned. If you see a snarling red machine on the circuits that looks like the offspring of a Maserati and a Lotus, recall that it was contrived by Martin, Jerry and the complete cooperation of the Central Steel and Wire Company. In the true sense of the word, it's a work of art, and it should be as good as it looks.

—Karl Ludvigsen

Testa Rossa

(Continued from page 43)

De Dion, even in their 290 bhp machines. The Ferrari approach encompasses three major points, none original or secret and all thoroughly tested in the past.

First, the axle assembly itself has been made as light as possible without sacrificing rigidity. Cast simply of aluminum alloy, the center section is split vertically in the plane of the axle shafts, and held together directly by 12 studs. The axle housings and attached box-section coil spring mounts are fabricated of sheet metal. Another twelve studs at each side fasten the housing flanges to the center section, thus stiffening the latter further. Hub layout is three-quarter floating, using a single ball bearing at each wheel. It's *not* a safety hub, T. R. owners!

Bob's car didn't have the Le Mans spiral bevel set in it after all, and it's currently running a 4.57 gear. Also handy are 4.25 and 4.00. Bob Cressman, the Ferrari's skilled nursemaid, remarked that a ratio change takes a mere six hours.

Secondly, the axle mounting is simple, yet positive in all three planes. It has the added advantage of being readily adjusted to course conditions. Basic locating member is a very wide-base trailing A-frame, welded up of small-diameter tubing. Its feet are pivoted just ahead of each rear wheel, while the point is attached to the axle center section roughly six inches below the shaft centerline.

This point locates the rear roll center, since the A-frame handles all lateral bracing. It also transfers accelerating torque reaction, in compression. A single trailing arm at each side, above the hub center, transfers braking stress to the frame, and places the axle around the low A-frame point.

A vertical coil spring acts just behind each hub, and adjustable Houdaille shocks damp the system through trailing arms. The Le Mans cars, in addition, have torsion anti-roll bars placed high ahead of the wheels. At that event they were no more than a modest ½ inch in diameter, but thicker ones could be fitted for tighter courses.

Third, and equally important, the center section combines a ZF torque-bias differential, so if that inside wheel *does* lift there'll still be some push at the outside. As a final precaution this is invaluable.

As a result of the fitting of a live axle, and particularly the way it was done here, the frame structure at the

rear could be made much simpler. Large-tube extensions curve up over the axle to take spring forces and support the fuel tank, and all suspension rods and the shocks are hung from a fabricated box at each side. The frame itself is still based on two big longitudinal tubes, but through the cockpit smaller tubing has been arranged in truss form to add beam stiffness.

Another offshoot, of course, is the mounting of the transmission in unit with the engine and clutch. The latter is a traditional Ferrari dry twin-plate unit, and it drives direct to an all-synchronized four-speed box. In any other context this would be quite normal, but on a Ferrari racing machine it certainly sounds strange! The driveshaft is conventional, using Hooke-type universals.

Throughout the rest of the Testa Rossa, the Ferrari heritage beginning with the 1951 Formula II Grand Prix cars is found pretty much intact. As is now standard practice with the marque, front suspension is by coil spring and unequal wishbones, plus the inevitable Houdaille shock absorber. There's also a hefty torsion anti-roll bar, with a short (and therefore stiffer) amount of leverage at each end.

The steering is familiar, with a three-piece track rod and steering arms ahead of the king pins. Brake drums are a further development of the centrifugal venting that used to be cast into the drums themselves. On this simpler car, the basic drum has a plain face pierced with holes, to which are added radial vanes and a thin sheet plate covering holes and vanes. It works better than the old layout, though it doesn't look as sexy, and it's lighter as well.

Closest of all to the GP car, though, is the twin-cam four cylinder engine. Ferrari's going to sixes and twelves again in much of his other machinery, and this is the way Enzo himself feels about engine design these days:

"We have confused the goal—the last stop—with the starting point. At the time of the two-liter Grand Prix formula our car was technically perfect: four cylinders, 2 liters, 200 horsepower. But that was the borderline, not the springboard, for stroke length, since the proportions change considerably for the worse with more than 500 cc per cylinder. Today we say: At the highest, 2 liters for a four cylinder!"

Though some commentators have mentioned radical changes down the line—new valve angles, and the like—the Testa Rossa actually differs only in detail at the top end from Lampredi's first designs. From the start, bore and stroke have been 90 x 78 mm, and the included angle between the valves has been 58 degrees. Running with 45 mm

(Continued on page 60)

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(Continued from page 59)

Weber carbs and a 12 to 1 compression ratio, the early GP versions turned out 180 horses at 7200, burning an 80/20 gas/alcohol mixture. In those days only the factory cars could turn 7000, and the private owners had to be happy with 6500. They later learned about fuels, and at the expense of consumption figures they reached 200 bhp. At that time ('52-'53) the engines were losing a lot of oil during a GP, and the pundits prognosticated that the ratty old fours wouldn't show for another season.

Well, they turned up in the Mondials, besides doing duty in modified form in the new Formula I machines. The Mondial was rated a rather optimistic 180 bhp, and was probably closer to a consistent 165-170 horses. Like the Monza, its lower end wasn't overly sturdy, but with that output it wasn't critical. As the red-painted version was being developed, though, with a solid 180 bhp at 7000, some stiffening was called for.

The Testa Rossa thus has much better crankshaft counterbalancing and a lighter flywheel, plus better main bearing support. It had no trouble standing up to the 225 horses at 6200 of the Le Mans rigs, which, in fact, pointed out some weaknesses in the new rear axle.

The Le Mans machines had a 9 to 1 compression ratio, which is probably used in the production Testa Rossa instead of the Mondial's 8.75 to 1. Carbs are 40 mm Webers, and the torque peak is at a useful 5500 rpm. Cressman fits his charge with Champion NA14 plugs, the two per cylinder being fired by twin Marelli coils and distributors. Valve gear and other top end goodies are virtually unchanged, though the new squared-off valve covers add an air of subtle mystery.

On the part of Ferrari, the Testa Rossa marks a welcome return to a simpler concept of racing. The production of this machine is a clear bid for the private owner trade, which has been rallying 'round as expected. Well they may, for though this is no Model T, it is somewhat easier to work on and keep running through a season. With the development that's been done, it shouldn't need much work anyway.

Looking ahead, this is probably the lull before another storm. The next Ferrari Class E sports machine may well use a V-8 version of their new Formula II V-6, and will undoubtedly have a rear-mounted clutch, gearbox and all. Sit down with us then, and we'll talk that one over with you!

—Karl Ludvigsen

Testa Rossa

(Continued from page 41)

in the top three gears and is in addition forgiving. The upshift can be of the snap variety, and the feeling of pressure on the back eases for only a fraction of a moment with the change. Somewhere around six thousand revs this four barrel changes tone and begins to sing and at seven, oddly enough, is the range in which this small engine packs its greatest wallop. Below this it's smooth, not ragged, but just doesn't get into its stride.

The drum brakes, although admittedly not being taxed with a record breaking effort were most satisfactory on this mickey mouse course where they had no opportunity to cool. The conventional suspension was more than apparent though under heavy braking as I stepped up the beat. Shutting off in the rough on the backstraight could be hairy indeed if I weren't careful, and the rear wheels might be overbraked for the bumps and the light fuel load we were carrying.

In the banking it was necessary to hold some inward pressure on the steering which was just about right—just a little bit of understeer. It had the feel of about two turns lock to lock. Not too quick yet just rapid enough. The tire pressures of thirty-two and thirty-six pounds front and rear might have been lowered slightly because of the surface irregularities on the backstretch.

Pedal pressures are remarkably light, requiring no more effort than in a garden variety sports car. The throttle in particular is unusually smooth, with an even pressure required throughout the range. The more you open the tap the more you get. In this the car was different from other earlier Ferraris I have driven which all seemed to have too much free play in the throttle linkage. A look under the hood explains this. The whole business is simple—artfully designed and meticulously wrought.

The seating is just right. Since much padding was removed to make the cockpit fit Bob, who is a six footer plus, I needed two small cushions—under and behind me—for no seat adjustment is possible. Once I was propped up the vision and feel left nothing to be desired. Despite this, there was almost no wind buffeting and the predominate sound always was the scream of the engine. Of all the modern cars I have ever driven this one harked back most in terms of

"feel" to the old school of fast cars. That is, the flexible chassis, solid axle, strong body and rock-like shock absorbers. The "TC" MG's or old Morgans come the closest to the well known machines. The steering, though, was as smooth as rack and pinion without kickback and with only very little road shock in the steering wheel.

For a car that was smooth and effortless in full flight it was shockingly noisy at low speed coasting to a stop with the engine dead. It even seemed not to want to roll free, but this last was mostly illusory. There was an awful clatter and rattle in the car as it slowed and rolled to a stop. Otherwise there seemed to be very little vibration in the cockpit. The clatter reminded me very much of the banging and rattling that my own MG Special created under similar circumstances and is undoubtedly due to the same causes—namely the extra light weight aluminum body paneling slapping and working against the chassis and support tubing structures. Unlike plushier vehicles, padding and rubber bushings are not used.

The clutch is positive and easy to operate. It is a little fierce on take off and undoubtedly will bear watching on the grid. What with the quick grab of the clutch coupled with the high rpm power characteristics of the engine it is an easy one to stall on the takeoff.

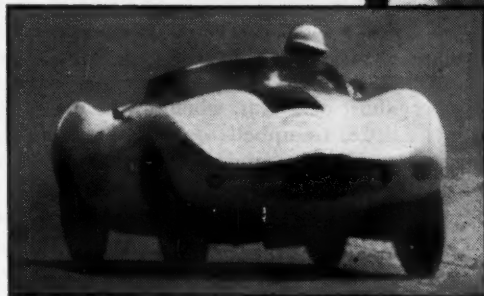
As I continued to circulate and let the car out under different circumstances I failed to shut off in time at the end of the back straight and had to clamp down hurriedly in near crash stop proportions. It became obvious that this one doesn't care in the least for being lugged around a corner in third gear at twenty-five hundred rpm for it sputtered and popped and carried on until I changed down and gave it a boot.

It was, of course, geared all wrong. Third gear was all that could be utilized in the back stretch, and the gear change point from second to third coming out of the "Clubhouse" turn was almost the shut-off point for the oval entry. Even in this form the acceleration was just short of breathtaking, and second gear could at any time spin the car if applied artlessly when leaving a corner. Under full cry in third the car was nothing short of wildly exciting.

As I climbed out, I realized that the legend about Ferrari exists not because of magic but rather because of Enzo himself. This is not the best handling car nor is it the best turned out in finish (although its coachwork by Touring is better than most modern competition Ferraris I have seen), but it is one of the most exciting by a mile and then some.

—David Ash

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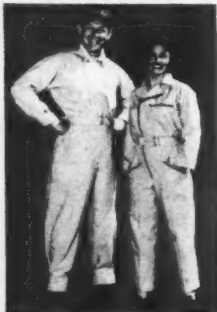
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Quick and Deadly

(Continued from page 21)

bounced back and forth between Campbell and Maj. H.O.D. Seagrave, whose twin-engined chain-drive Sunbeam doubled the century to set the fastest land speed at a hair under 204 mph. He held the crown for just short of a year, when, on February 19, 1928, Campbell took his Napier back to Daytona and reclaimed the title at 206.956 mph.

What happened then was the White-Triplex, the most horrendous contraption ever to be taken seriously as a motorcar.

By a Philadelphian named J. H. White, out of an old truck chassis, this Rube Goldberg had absolutely no clutch, gearbox, or springs. The nearest it came to having brakes was a pair of steel bands that could be contracted to put a little friction on the back axle. It was called the Triplex because of its power supply: three 400 hp V-12 Liberty engines — racking up the staggering statistics of 36 cylinders, of a total capacity of 81 liters!

How anyone could have been induced to try driving this motorized meat grinder is a mystery. However there never seems to be a shortage of the kind of guy who will stick both feet in a puddle and grab a high-tension lead, just to see if it's true what they say about amperes.

In the White-Triplex the victim fitted into a slot made by the single Liberty forward and two-side-by-side behind him. The cockpit was a maze of connections and odd bits of whirling shaft, but there were not too many controls to worry about. With no clutch, no gearbox, and precious little in the way of brakes, all the driver had to bear in mind was: if the engines are going, car is moving. In order to stop car from moving, stop engines. There was no other way. In order to conform to regulations, the Triplex was fitted with a theoretical reverse: a starter motor snubbing a back wheel. This device was strictly a law cheater. It seldom really worked, and even when it was operating at maximum efficiency one had to look twice to determine whether the car was moving backward at all.

Booby traps like the Triplex have an insidious way of standing up fine in practice, then going boom on the record run. The Triplex itself was no exception. On its first record try a hose connection came adrift, flooded the cockpit, and landed driver Ray

Keech in the hospital with serious scalds.

On his release from the accident ward Keech had another spin in the undertaker's delight. Though once more badly burned — this time flash burns from backfire — and severely shaken when the springless wonder hit a bump and hurtled through the air for fifty feet, Keech took the record at 207.552.

Seagrave topped this the following year, 1929, and Keech was once more approached to try a record run in the Triplex. He very wisely refused, and went on to win that year's Indianapolis 500. Lee Bible, who accepted, was crushed to death when the 1200 hp juggernaut went out of control and turned over on him.

With the demise of the White-Triplex, a period of relative sanity set in among backyard builders — or maybe it was the Depression. Building cars to take the Land Speed Record became a job for platoons of designers working with well-equipped factory teams, wind tunnels, and masses of money. The World War I engines that had been so cheap and easy to get became scarce. Those that were around were either museum pieces or plumb tuckered out.

This lull lasted until about four years ago, when two cars powered by ex-Spitfire Rolls-Royce Merlin engines suddenly appeared in competition: the Triangle Spitfire Special, and the Swandene Spitfire Special. It would be thrilling to say that these supercharged 27-liter giants chewed up everything in sight, but the plain fact of the matter is that they haven't. Most of their performance is in the realms of theory, since there isn't a drag strip in England where they can really do their stuff. In fact, by American standards there isn't a drag strip in England, period. With 16.5 lbs. per sq. in. boost the engine delivers 1610 bhp at 3000. On the bench F. M. Wilcock has got 4000 revs out of his Swandene, for a paper 475 mph, but in actual competition neither of the Spitfire specials has endangered the Brighton Speed Trials record of the relatively tiny 2-liter E.R.A.

The Swandene goes like a bomb, sounds like one — no muffler, of course — and is none too safe. However, Wilcock's narrowest escape with his creation didn't happen while he was driving it — it happened when he opened his mail one morning. Seems Her Majesty's Customs and Excise wanted slightly over \$2000 in purchase tax on the special.

Fortunately the law was amended in time to avert one of the worst kinds of accident: bankruptcy!

—Merwin Dembling

Palm Springs

(Continued from page 49)

week prior to Palm Springs, a persistent rumor claimed that Drake had been offered the chance of driving for the Aston Martin team if he performed well. Neither he nor the factory representative had any comment on this.

Over a minute and a half behind the leader were Richie Ginther, a top threat at recent meets, in John von Neumann's Porsche 550, and Jack McAfee in another Edgar Porsche. Jim Kimberly, the first eastern representative to finish, turned in an uninspired performance in his OSCA, wound up fifth and scurried back to hosting Jackie Cooper, Ann Miller and Kirk Douglas atop his blood red van. It was the only bid from his stable for the day.

Ken Miles, admittedly the number one West Coast boy in the small cars, did not compete. Some time back, he was unceremoniously tossed out of the SCCA for his persistent and highly vocal views concerning club policies, practices and officials.

Earlier in the day, Bob Oker, one of California's bright young hopes, and seasoned veteran E. Forbes-Robinson stood the 25,000 spectators on their collective ear. Although Forbes-Robinson gave his Austin-Healey a ride the likes of which has never been seen on the West Coast, it just wasn't enough to take Oker in Ed Savin's blindingly fast AC-Bristol. After finishing three seconds behind in a battle that saw the lead change several times, Forbes-Robinson grinned and admitted he would have given "nearly anything for just three more horses."

Somewhere in the distant background, Don Dickey's Porsche Carrera Coupe, Dale Johnson's Porsche Carrera and the Porsche Speedster wheeled by Tracy Bird and finished in that order.

The following event, for production cars over 3000 cc plus Mercedes 300SL's, saw Oker and Forbes-Robinson almost duplicate their previous effort before race officials belatedly decided they had goofed. Both were allowed to start at the back of the pack on the basis of their showing in the previous event. In almost less time than it takes to tell, they were running fourth and sixth, gaining up to five seconds a lap on the leader. Then the officials decided the pair were about to embarrass their financial elders and hung out the black flag, claiming they hadn't been qualified to enter the event in the first place. Two weeks later, the local press was still in a flap over this one.

Although it had a tendency to be obscured by the ensuing hassle, the race itself was a real crowd pleaser. Paul O'Shea and his Mercedes 300SL were expected to set the pace, but a mechanical failure retired him to the shade of the Edgar van before he really got rolling. From there on it was a hairy-edge battle between Jack Bates' Mercedes and Dick Thompson's Chevrolet Corvette with the Mercedes of Rudy Cleye staying within challenging distance and pulling up on the leaders in the closing laps.

RESULTS Palm Springs National November 3-4, 1956

RACE I: OVERALL AND CLASS G:

Richard Morse, Alfa Romeo; Walter Garlick, Alfa Romeo; Leon Miller, Alfa Romeo; Jack Dair, MG-TD; Adrian Warren, Alfa Romeo. Sedans: Ron Pearson, Volvo; Marvin Moar, VW.

RACE II: OVERALL AND OVER 1500 CC:

Marion Lowe, Frazer-Nash; Mary Davis, Triumph TR-3; Ruth Levy, Porsche Super; Betty Shutes, Porsche Super; Virginia Sims, Triumph TR-2. UNDER 1500 CC: Marie Dixon, MG-A.

RACE III: OVERALL:

Bob Oker, AC-Bristol; E. Forbes-Robinson, Austin-Healey; Donald Dickey, Porsche; Dale Johnson, Porsche; Tracy Bird, Porsche. Class D: E. Forbes-Robinson. Class E: Bob Oker. Class F: Donald Dickey.

RACE IV: OVERALL:

Bob Drake, Cooper-Climax; Peter Lovely, Porsche 550RS; Richie Ginther, Porsche 550; Jack McAfee, Porsche 550; James Kimberly, OSCA; Harvey Mayer, Lotus Mk IX; Chick Leson, Monza Maserati; Jay Chamberlain, Lotus Mk XI; Harry Banta, Cooper; John Porter, Porsche 550. Class F: Drake; Lovely; Ginther. Class G: Mayer; Chamberlain; Banta. Class H: James Orr, Devin Panhard; William Boone, D-B LeMans; Ed Parker, Renault Spyder.

RACE V: OVERALL:

Richard Thompson, Corvette; Jack Bates, Mercedes; Rudy Cleye, Mercedes; Bob Dickson, Mercedes; Mel Allen, Corvette. Class C: Thompson; Allen; Bob Weller, Jaguar XK L40. Class D: Bates; Cleye; Dickson.

RACE VI: OVERALL:

Carroll Shelby, 4.9 Ferrari; Phil Hill, 3.5 Ferrari; Harold Erb, D-Jaguar; John Barneson, Hagemann Special; Jack McAfee, 3.5 Ferrari; Bob Drake, Aston Martin; Peter Lovely, Porsche 550 RS; Bob Gillespie, Maserati A6GCS; Rod Carveth, Aston Martin; Jack Douglas, D-Jaguar. Class B: Barneson. Class C: Shelby; Hill; Erb. Class D: Drake; Carveth; Jack Boyle, Austin-Healey 100S. Class E: Jim Lowe, Frazer-Nash. Class F: Peter Lovely, Porsche.

Bates managed to keep his car out in front for most of the race, but Thompson came through with one of the wildest bits of cornering to be seen all week-end and took over the lead with less than a quarter lap left to become the only Eastern driver to take a top spot. Bates finished one second behind with Cleye trailing by another three. The first Jaguar to finish wound up in sixth place.

But the keynote of the entire business was supplied by a well-known Eastern competitor, who asked specifically that he remain nameless. "You seldom see competition like this in the East," he commented ruefully. "These boys are out for blood. They act like winning was a matter of life and death."

—Jim Mourning

Sunbeam Test

(Continued from page 47)

The underslung central console holds widely-separated controls for the car and defroster sections of the built-in heater. An evening school by the fire with manual is recommended for the mastery of these knobs (the small ends of which are hard to grasp), but after this you can put warm or cool air anywhere you want it, in almost any quantity. The English Motorola radio had remarkably good acoustics, and twin-speaker installations can be had.

Down below, the three pedals are of the same size and on the same level. As a result, the gas pedal is a trifle high for comfortable turnpike driving. Otherwise there's plenty of floor-board room, under the suspended pedals as well, and the dimmer switch is an easy left foot job. An excellent feature is the pull-up handbrake between the driver's seat and the door. It's a top Rootes trick.

With their high, curved, shoulder-supporting backs, the seats are very comfortable on a trip. The seat portion itself is wide, and both are adjustable fore-and-aft. Both backs fold fully forward for easy access to the rear seat, with its fold-down center armrest, and ash-tray located on the prop shaft tunnel. Though the winding knobs are uncomfortably close to the seat cushion, the big rear quarter windows will go all the way down, and, with the remaining large window area, they give an airy, open feeling.

Visibility is very good, from an upright, chair-like driving position. The wheel is well away at a convenient angle, and there's plenty of room for action all around. Headroom is ample, both at front and rear. Once you're used to the column shift principle, the lever can be flicked while both hands are on the wheels.

For rallies and traveling plenty of storage room is needed, and it's provided by a very deep and wide glove compartment, plus a shelf to the left of the steering column. The trunk itself is wide and practical, thanks to the squared-off rear end. The lid supports help you lift the lid, hold it up for you, and don't fight you when you're lowering it. Equally positive action is provided by the big twist latch. Trunk trim is adequate, and the jack and tool-kit stow behind the spare wheel.

A lot of the kick in owning an unusual car can be traced to visually exciting goodies under the hood, and these

(Continued on page 66)

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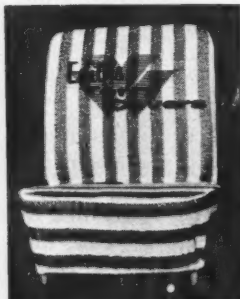
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GP Desert

(Continued from page 31)

A ferry across the river let the contestants off on the "road" toward Phoenix. Some of the high centers on this road had been removed, but those remaining would scrape the differential off a Patton tank. The battle for first place boiled down to Joe Nikrent in the Buick, and Max Persman in Col. Fenner's Isotta. The lead yawned back and forth between the two, with the Fraschini pulling ahead each time the Buick stopped for oil; a procedure made necessary by a violent disagreement between the sump and a high crown in the road. The Buick managed to regain the lead each time, and a blown tire, coupled with a bent front axle and a broken fuel line, finally put the Isotta out of the running. It had to be towed four miles to the finish line, and the capable Joe Nikrent went on to win in 19 hours 40 minutes—shaving a scant 11 hours from the previous record.

cracked frames, bent axles

The other finishers were: Persman, in the Isotta, at first disqualified, but later given place money. (The judges probably reasoned that in a race in which the cars were ferried, poled, and shoveled a good part of the way, a little thing like a four-mile tow could be overlooked); Stone in the Columbia, third, despite the two hours lost repairing his cracked frame; Bert Latham in the Studebaker EFM, fourth, having run the last 70 miles without water and with a bent front axle; A Kissel finished fifth, with the customary bent front axle, along with a bent steering rod and a broken steering knuckle. Sixth and seventh positions were held by the two early crackup victims: Rose in the Elmore, and Vail in the Pennsylvania. To keep up with the spirit of the thing, Rose had stripped all his gears save one, but he had neglected to bend his front axle, so he can't really be said to have been playing the game. The only other finisher, a Ford, came in 3½ days after the start, providing the first instance of a car being timed with a calendar. The others are presumably still out there.

Having learned the route well enough to take second place in 1910 and 1911, Ralph Hamlin, the man who had decided to go it alone in the first running, determined to go all out to win in 1912. He was resolved to prove the superiority of the Franklin for which he was a dealer. The Franklin had large wheels and tires for better traction in the sand, and it was

air-cooled—a distinct advantage in an area where water flowed like twenty-five-year old Scotch.

Against him that October 26th, in Los Angeles, were eighteen of the country's best cars and drivers: Bill Bramlette and Charles Soules in Cadillacs; Louis Nikrent, again driving for Buick; Charles Bigelow in a Mercedes; Leonard Jones in a Hupmobile; Al Faulkner in a Simplex.

sand, dust, and streams

The field was flagged away at the traditional five-minute intervals, and Hamlin, in his Franklin was the ninth to start. The first hundred miles allowed speeds of 65 mph, a factor which contributed to Nikrent's piling up his Buick, and Bigelow's plowing into the wreckage. Hamlin avoided the tangle, and overtook Jones in the Hupmobile near Banning, California. Just outside Palm Springs, he passed Bramlette in the second Cadillac. After stopping to replace their first and only blowout, Hamlin and Smith, his mechanic, sent the Franklin after the Simplex, which held a twelve-mile lead until it was buried in the shifting sands of Mammoth Wash. Hamlin and the Franklin chugged into the lead, and were ferried first across the Colorado River.

At Yuma, Arizona, the first control point, word came that storms and flash floods had washed out the roads ahead; the Hassayampa River and the Gila were impassable. Not one to throw away a perfectly good lead, Hamlin pressed on regardless. He managed to cross the Gila easily, but the best he could find at the Hassayampa was a spot where the water was only two feet deep. He wrapped his magneto in rubberized cloth, forded the stream, and repeated this process across the Agua Frio. Needless to say, this display of Yankee ingenuity outclassed all competition, and Hamlin roared into Phoenix, his Franklin in relatively pristine condition, a winner in the record time of 18 hours and 27 minutes. This time was never beaten for the route.

The promoters tacked almost 100 more grueling miles on to the race in 1914 when it was run at 671 miles. But this last and longest event was a romp for the King of Speed himself—the great Barney Oldfield. With a racing version of the fabulous Stutz Bearcat under him, Barney grabbed the lead at the start and was never headed. Even with the added mileage, he nearly cracked the record by averaging 29.2 mph. It was a spectacular performance by a great driver and a great car that wrote a blazing finale to the most rugged auto race in the annals of the sport.

— J. L. Beardsley

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(Continued from page 63)

the Rapier has in number. First laid out by E.R.A., the twin-carb set-up is accessible and has a simple, rugged throttle linkage. Horizontal sheeting above the manifolds protects the carburetor bodies from radiated heat. On the left, as you view the engine, are the plugs, coil, distributor, mechanical fuel pump and heater blower, while on the right the battery, voltage regulator, hydraulic reservoirs and windshield wiper motor can be reached. The big central air cleaner has a long duct to draw cool air from the front of the compartment. Details have been given a lot of thought here, the result being that the whole

package works very well, and revels in hard work. That's the way the car is belying its playboyish exterior.

Price-wise the Rapier is near the bottom of the two-seater sports car range, and if you need more room with a sporting feel it should respond to most of your whims. The base tag on the east coast is \$2499 (\$2536 in the West), which includes overdrive, heater, cigarette lighter and directional signals. A clock, whitewalls and radio are extras at attractive rates. It's an extremely well-finished and solid machine for the money, and it can get over the road besides.

—K. E. Ludvigsen

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\$6.50.

Mr. Campbell's book is a very comprehensive piece of work that deals with the entire high-performance automobile rather than with its power source alone. Four chapters are devoted to engine discussion, three to chassis design and behavior, one each to transmission, brakes, tuning and performance analysis. The final chapter speculates and prophesies on what the future holds for this type of vehicle.

The introductory chapter begins with a tribute to the wonderful cars of an earlier day, taken from the lines of Omar Khayyam:

*"Some we have loved, the loveliest and the best**That from his Vintage rolling Time has prest,"*

The first chapter goes on to trace the development of the sports car and includes a very workable answer to the inevitable question, "What is a sports car?" This initial chapter is written elegantly and entertainingly and it's as compelling as a Raymond Chandler thriller.

Unfortunately, the rest of the book is not. In his introduction the author says, "This is not a text-book of design. Mathematics have been kept to a minimum . . ." But this protestation does *not* keep the volume from being almost indistinguishable from a text-book. The author is more than liberal with mathematical formulae, even tossing in a bit of differential calculus; however, his occasional lapses into the idiom of the enlightened layman deserve real applause. The rest of the time he communicates in the less generally-comprehensible jargon of the self-conscious engineer.

Campbell is an excellent authority and he has great confidence in the theoretical detail when he deals with the tuning of breathing systems. He's had a great many years' experience in this field and the "Ramming Pipe Theory" he presents is a valuable addition to Phillip Smith's cut-and-try recommendations for intake and exhaust tuning. Each of these authors, incidentally, has a very different way of evaluating stroke/bore ratio.

Campbell's work is rather unique in its detailed treatment of so many facets of the design and behavior of the modern sports car. When you've read him on road-holding, tires, suspension, brakes and frames you're likely to be a much wiser person, and, perhaps, a more enthusiastic one as well.

This is a very desirable book, its only defect being the one already mentioned. Campbell would reach a much larger audience of practical enthusiasts if he would exploit his demonstrated talent for expressing himself in words and phrases that the average fan can digest pleasantly and without excessive cerebral effort. However, cerebral effort notwithstanding, the volume makes an extremely valuable addition to the bookshelf of both the practicing tuner and the arm-chair engineer. It's a "must for those who would squeeze out that extra second of lap time or fractional mile an hour on the straightway.

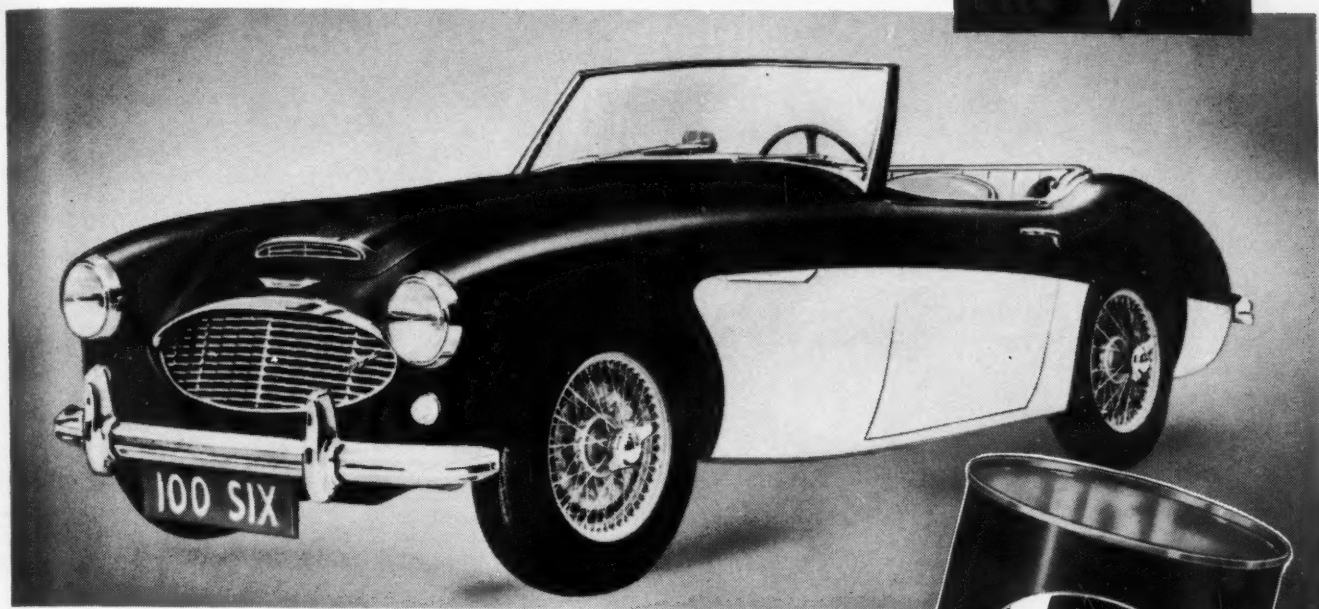
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